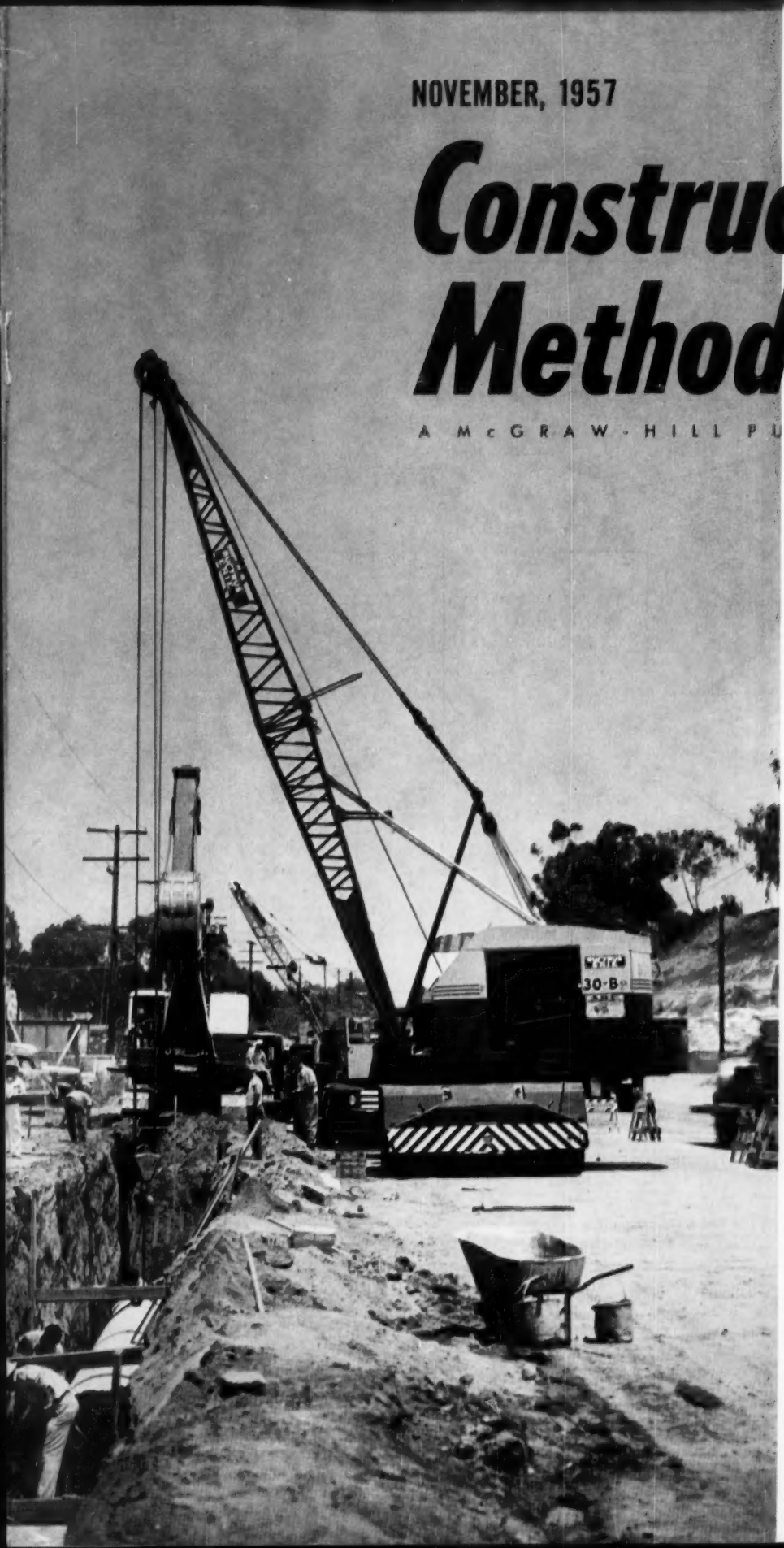
NOVEMBER, 1957

PRICE $1.00

Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION



Backhoe and crane team up to lay 160 lin ft of 48-in. water line every 8 hr on Southern California job p2

CONTENTS, PAGE 4

175 units rush Illinois Toll Road



with Yellow Strand Wire Rope



The North Illinois Tollway is a beehive of activity. This will be the four and six-lane super highway connecting Chicago and Rockford. The contract calls for completion in July, 1958. Bad weather slowed down the job last spring.

Now, the byword is "rush." On the S. J. Groves & Sons Co. section near Des Plaines, Illinois, 175 pieces of equipment, including scrapers, dozers, trailers and cranes scamper through round-the-clock shifts. Probably the biggest collection of equipment on any one job in Illinois road building history is at work.

This is a tough role for men and machines. Beating close deadlines shows up the in-built stamina in equipment. It separates the "wheat from the chaff." That's why the choice of wire rope to operate the scrapers, dozers, trailers and cranes is Yellow Strand.

Quality-manufactured, dependable Yellow Strand Wire Rope stands the abuse of long shifts. Savings in down time and replacement time are substantial. These same qualities of long life Yellow Strand "POWERSTEEL" and Yellow Strand Flattened Strand can save money for you. Yellow Strand Wire Rope is stocked by your nearby distributor. If you don't know him, write us direct for his name.



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. . . always on hand at your distributor

BRODERICK & BASCOM ROPE CO.

Manufacturers of Wire Rope for over 80 years

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B.F.Goodrich report:

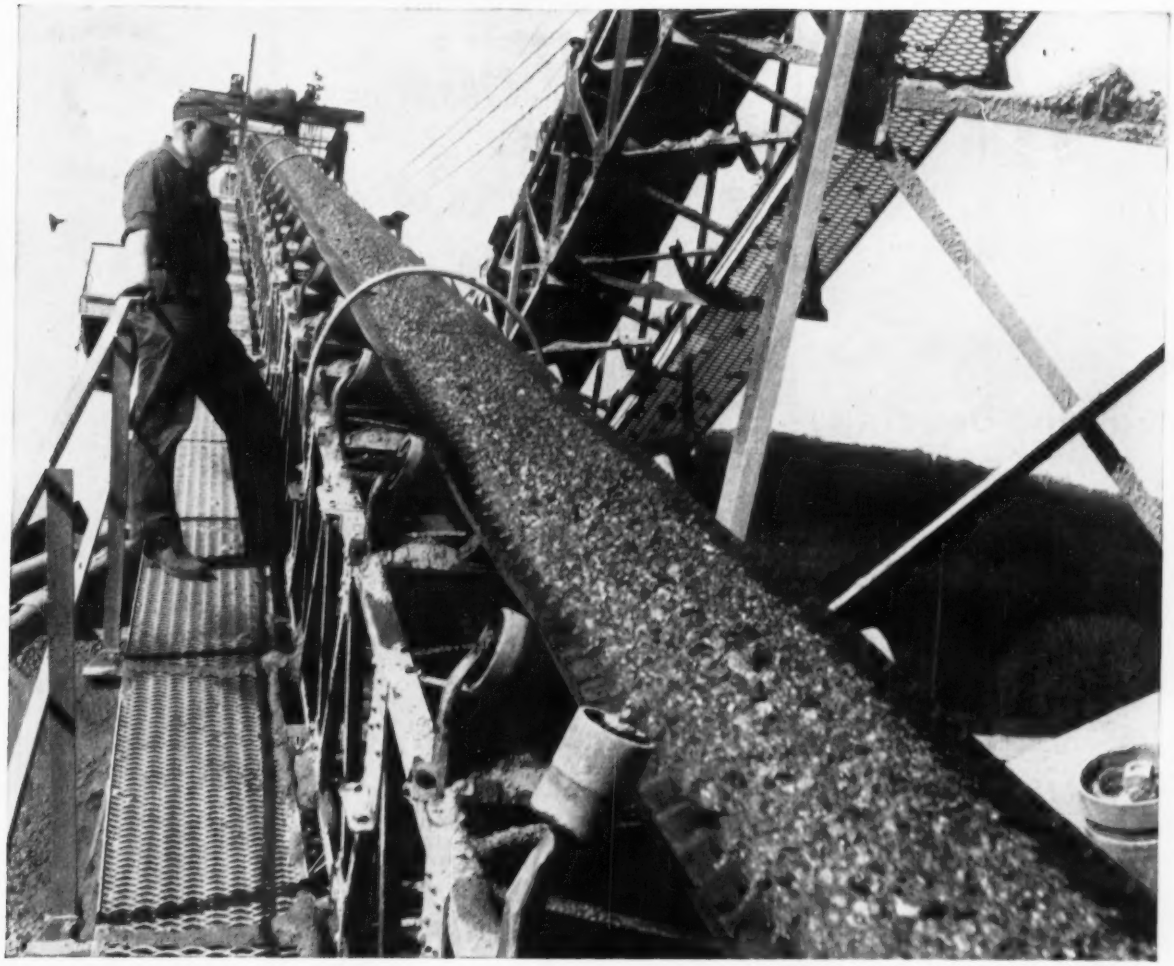


Photo courtesy Basic Construction Materials Division, Chillicothe, Ohio.

Rocks used to slide down faster than they went up

B. F. Goodrich improvements in rubber brought extra savings

Problem: Getting tons of sopping wet rock and gravel up that steep incline was causing plenty of trouble at this plant. When a regular conveyor belt was used, the wet gravel often washed *down* faster than the moving belt could carry it *up*.

What was done: Then a B.F.Goodrich man told the company about a special kind of belt, developed by B.F. Goodrich, to handle wet materials. This "Riffle Grip" belt, as it is called, is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the gravel in place, and at the same time, channels the water to the edges of the belt where it falls off.

Savings: This B.F.Goodrich belt was tried, and it works perfectly. The gravel flows smoothly uphill. More tons are handled with no slipping, no sliding, no problems of any kind.

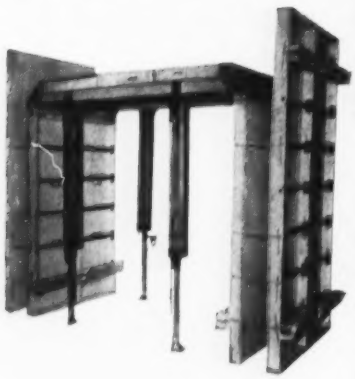
Extra benefits: Another important feature is that just by using different angles of incline and troughing idlers, this same belt can carry such sloppy materials as wet mixed concrete and keep the water from draining away.

Where to buy: Your B.F.Goodrich distributor has exact specifications for the B.F.Goodrich conveyor belt described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-206, Akron 18, O.*

B.F.Goodrich

INDUSTRIAL PRODUCTS

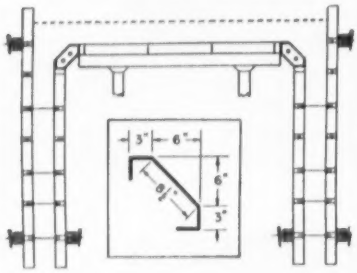
Culvert Forming



Symons Develops New Haunch Form for Culverts

Symons Safety Shores Used to Support Slab

Symons now has a new 9 x 9 inch steel haunch section designed to connect Symons standard wall panels and slab panels for the monolithic pouring of culverts. This new section provides for a 3-inch face on the roof slab and



on the wall with a 45-degree-angle surface 8½ inches wide between wall and roof. No built-up forms or other special equipment is necessary.

Made of 11-gauge hot rolled steel this new section is available in 4, 6, and 8 foot lengths. It can be used with either metal frame or wood frame forms. Symons regular form hardware is used for securing the steel section to Symons standard forms. No special fittings are required.

Symons forms, shores and column clamps may be rented with purchase option. FREE literature on Symons products is available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4255 Diversey Avenue, Dept. L-7
Chicago 39, Illinois

Construction Methods AND EQUIPMENT

NOVEMBER, 1957

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On the Cover

To bring Colorado River water to Culver City, Calif., three Bucyrus-Erie rigs lay 11½-ton sections of 48-in. reinforced concrete pipe on a 7-mi stretch through Los Angeles. A 38-B hoe first opens a 6-ft trench about 16 ft deep, a 30-B crane places the pipe, and a 22-B clamshell follows with backfill. ABC Construction Co., from nearby Norwalk, is netting 160 ft of completed line each 8-hr day with the three machines. Its $2.7-million job, which includes 14 tunnels from 40 to 300 ft long, was started last April and is due for completion next July.

MEMBER ABP ABC

VOLUME 39 NUMBER 11

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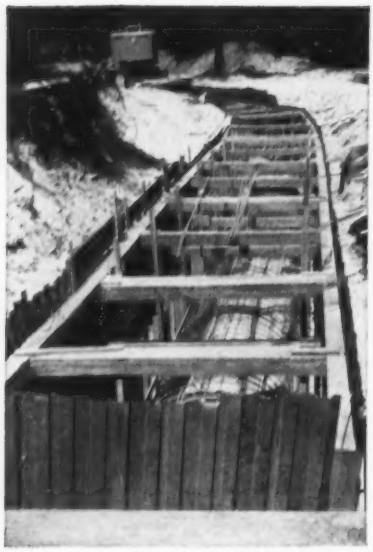
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November, 1957

Pay Dirt in This Issue

Bridge Girders Roll Across River on Rails 80
Prestressed stringers ride into position on rails suspended from temporary bents on each side of piers.

Mexicans Lift Slabs to 12-Story Height 82
A new type steel column, called the "Mexico Column," makes it possible to lift slabs to record 101-ft height.

Crane Teeters, Then Topples 84
Rain softened fill gives way, tipping a 20-ton crane, but contractor uses second crane to right it quickly.

Haul Scrapers Up Steep Slope 86
Logging winches pull scrapers 525 ft up a 62% grade to make sidehill cut on a roadbuilding job in California.

Specs for Your Files 95
CM&E's latest comparative specification charts present up-to-date information on steel and pneumatic rollers.

Hydraulic Rotary Drills Bore Rock Tunnel 104
Skeptics said it wouldn't work, but new hydraulic equipment proves its worth in a Chicago rock tunnel.

Scrapers Build Clay Embankment 117
Racing against time on the Illinois Toll Road, scrapers work two shifts to make up delays caused by rain.

Bridge Floats on Big Concrete Pontoons 132
Concreting methods are outstanding in construction of concrete pontoons for a long floating bridge in Canada.

Paving on a 58% Slope 144
Unique turntable handles asphalt paver and batch trucks on upstream face of a dam high in the Rocky Mountains.

Tricky Excavation Under Terminal 154
Intricate cut-and-cover methods are employed to hollow space in rock outcrop under New York's Penn Station.

Steel Forms Cut Pier Costs 160
Forty-two bridge piers 135 ft high go up fast as long-boomed cranes place concrete in efficient steel forms.

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Next Month It's no easy job to build a cofferdam in the middle of a river bank with a 1-to-1 slope where there's a heavy load on the land side and nothing to brace against on the water side. Contractor Harry O. Wyse did it with steel sheeting held by batter piles into the river and by horizontal piles driven through the bank.



Rough Going Doesn't Faze **Gorman-Rupp Lightweight Pumps**

Mud and frozen chunks of dirt won't stop this pump. It's a Gorman-Rupp "80" Series. Straight-in suction delivers liquid directly to the impeller's eye. No entrance restrictions. No check valve. Capacity, efficiency and suction lift are increased.

Gorman-Rupp "80" Series Centrifugal Pumps prime and reprime at lifts up to 30 feet. They are easily moved from location to location because of lightweight, aluminum construction. (The Midget weighs only 48 pounds.)

Available in four models:

Midget, 1½", 6,500 GPH, 2.25 HP
Pelican, 2", 8,500 GPH, 2.75 HP
Hawk, 2", 12,000 GPH, 5.5 HP
Eagle, 3", 18,000 GPH, 6.8 HP

Ask your Gorman-Rupp Distributor for a demonstration.

NEW PRIMING PRINCIPLE

introduced at the Road Show

PUMP AT REST—Captured liquid retained for priming. Note absence of usual check valve.



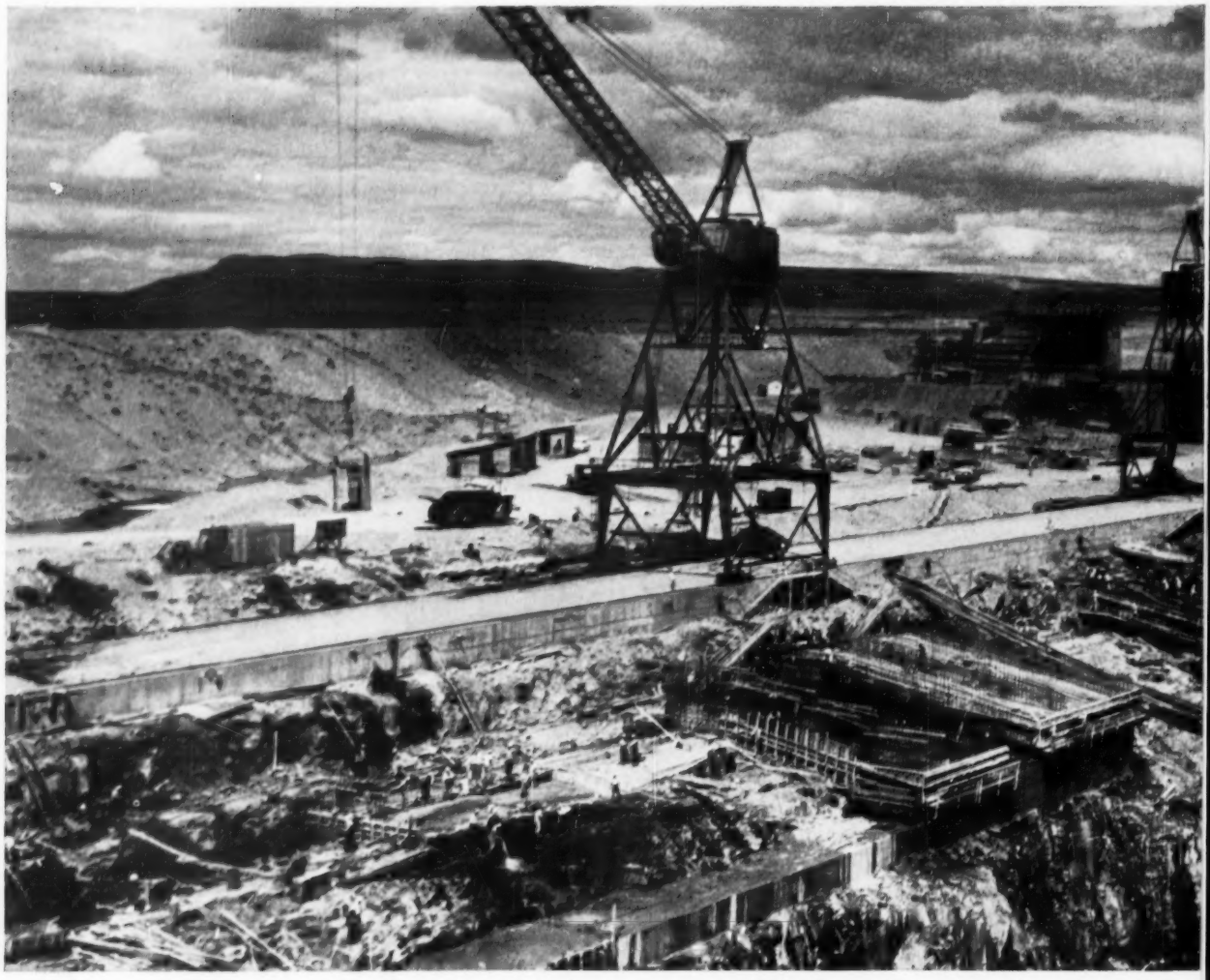
PRIMING ACTION—Entrained air (B) escapes at (A) to be discharged. Priming liquid returns (C) to entrain more air.



PUMPING ACTION—Straight-in suction voids entrance restrictions. Water enters direct to the eye of the impeller.

THE GORMAN-RUPP COMPANY

305 Bowman Street • Mansfield, Ohio



Excavation for powerhouse at Priest Rapids Dam is over 4,000 feet long and between 40 to 90 feet deep.

It's a $92,000,000 job—
and Texaco helps keep it on schedule

This $92,000,000 Priest Rapids Dam project is the second largest competitively bid contract ever awarded to a single contractor. It is being constructed by Merritt-Chapman & Scott. There is no time for down-time on a colossal job like this, so Merritt-Chapman & Scott—knowing from past experience the value of a Texaco Simplified Lubrication Plan—started it off by calling in a Texaco Lubrication Engineer to work out a Plan.

This is the most far-sighted step in any lubrication program because it cuts inventory down to as few as 6 products to handle all major lubrication. That minimizes chances of making lubrication mistakes, and trims your maintenance expense. Above all, the Texaco Simplified Lubrication Plan is a big help in keeping your jobs on schedule.

Merritt-Chapman & Scott, for example, extend their engines' service period between overhauls with *Texaco Ursa Oil Super Duty Special*. They also get full rated engine power and save on fuel. They get long-lasting chassis protection by using



Texaco lubricants are used exclusively on the job by Merritt-Chapman & Scott.

Texaco Marfak. It doesn't pound or squeeze out. Wheel bearings get the same kind of protection from *Texaco Marfak Heavy Duty 2*. It seals itself in, seals out dirt and moisture, and needs no seasonal change. For transmissions and differentials, they use *Texaco Universal Gear Lubricant EP*.

Ask a Texaco Lubrication Engineer to work out a Texaco Simplified Lubrication Plan expressly for the problems of any job you're working on. Just call:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



Huge dragline is one of several being used to build Priest Rapids Dam on Columbia River south of Vantage, Wash. All are kept operating at top efficiency with Texaco lubricants.

TEXACO

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FOR ALL CONTRACTORS' EQUIPMENT

Precast and prestressed concrete units manufactured and erected by:
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Architect: Philip R. Soloway, Vineland, N. J.
Consultant Designers: M. Saphier Associates, Inc., New York City

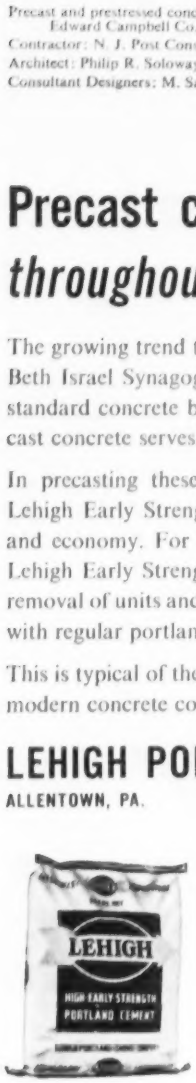
Precast concrete construction *throughout . . .*

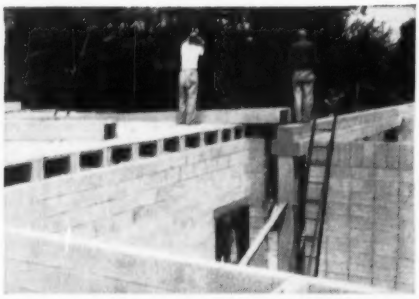
The growing trend toward precast concrete is illustrated by this new Beth Israel Synagogue and School at Vineland, New Jersey. From standard concrete block to huge 60 ft. prestressed double tees, precast concrete serves both architecturally and structurally.

In precasting these units, the Edward Campbell Company used Lehigh Early Strength Cement for maximum production efficiency and economy. For example, in making the double tees, they used Lehigh Early Strength Cement and hot water curing. Result: early removal of units and reuse of forms in less than half the time required with regular portland cement.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA.





Placing one of the 440 "Clearspan" channels in the roof of the classroom building.



This inverted tee beam, 2'10" deep x 27' long, was especially cast for the job. Note extensive concrete masonry in common, stack and ashlar patterns. Load bearing walls include pilaster and bond beam block.



Rear view of classroom building shows variety of units used—concrete block, precast columns, cantilevered beams, window beams, lintels and cantilevered roof channels.

38 of these prestressed double tee roof beams (60' x 4' x 16") will form the roof of the synagogue.

LIFT 'EM HIGH!

The Metropolitan Life Insurance Co. at Ottawa, Ontario, is raising the roof! Raising the roof, literally — by adding two more stories to the home office building.

Here, a Northwest truck crane is hoisting steel to the present roof top. Later it lifted the 15-ton cab and rotating base of a Northwest Model 25 to the roof to handle the steel erection.

This is just one of the many jobs that Northwest Crawler and Truck Cranes are doing all over the country. They are versatile rigs. They bring a combination of money making advantages not found in any other similar piece of equipment.

Pivoted, easily lowered gantries, removable counterweight, a wide choice of boom hoist equipment, sectional boom hoist rigging and pendent lines, telescopic boom struts, extended boom point sheaves for piledriver leads, 3rd drums and many more standard and special features are available to give you the greatest possible flexibility for the most profitable solution of your job problems.

There are things about crane design you should check into. Let a Northwest Man discuss your crane problems with you.

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25 TON and 35 TON
CRAWLER CRANES
10 to 50 TONS



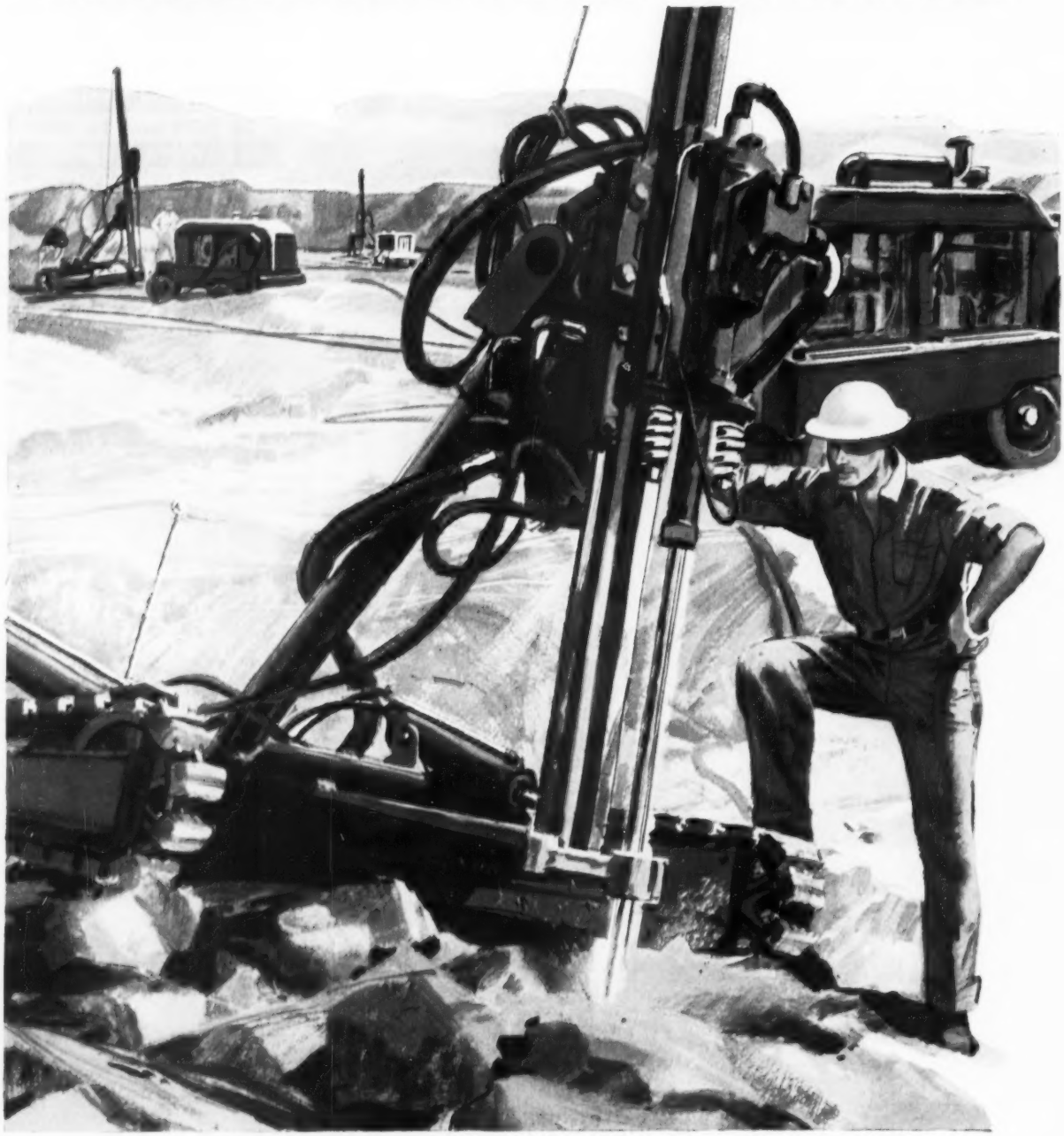
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TODAY the list of contractors who operate—and manufacturers who build—air compressors and electric welders powered by General Motors Diesels reads like a "Who's Who" of the industry.

Operators around the world have found that these modern 2-cycle Diesel engines pack more power in less space and weight—pick up under load faster than 4-cycle engines—deliver a smoother, steadier flow of power that gets work done faster.

These compact engines are designed for easier, lower-cost maintenance. Unit injectors eliminate complex fuel systems and troublesome high-pressure lines. Smaller size makes the GM Diesel more easily accessible for servicing.

Above all, interchangeable GM Diesel parts make it unnecessary to carry large, expensive parts inventories. In the 71 Series, practically all of the wearing parts are interchangeable *regardless of engine model.* This makes it easy to have the right part available when needed—speeds repairs—gets equipment back on the job with less down-time. And GM Diesel parts cost up to 60% less than comparable parts for competitive engines!

The superior performance and dependability of GM Diesels are backed by a world-wide network of distributors and dealers—with complete parts stocks and service facilities readily available throughout the United States and Canada, as well as overseas.

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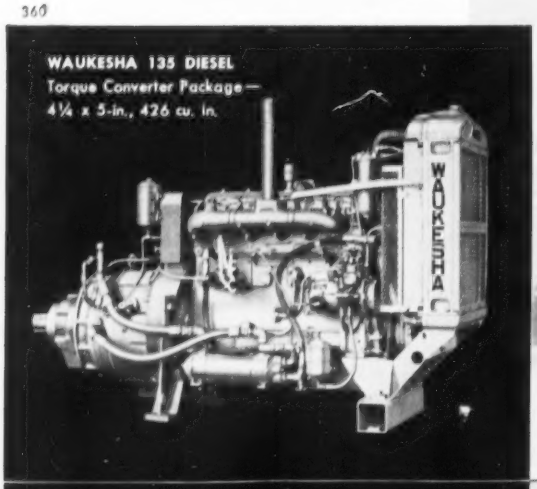
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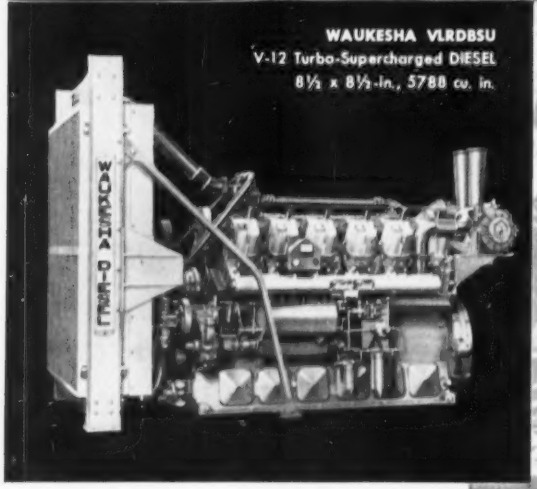
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Teer's CAT* No. 12s help build approach to Patapsco River Tunnel

An important new highway link for North-South travel is the Patapsco River Tunnel, south of Baltimore, Md. It will create a direct connection between Rt. 40 and U. S. 1 without bucking mid-city traffic.

Nello L. Teer Co. of Durham, N. C., is building a 2½-mile section of the four-lane divided expressway leading to the tunnel. The contract calls for moving 1,200,000 cubic yards of earth. Teer's spread on this job includes 12 Caterpillar DW20 Tractor-Scraper units, six D8s, a D9 and two Cat No. 12 Motor Graders.

Good haul roads contribute to low-cost earthmoving, and keeping roads in shape is a motor grader job. With its rugged construction, balanced design and dependable four-cycle Cat Diesel Engine, the No. 12 is built for top production around the clock. Positive-acting controls, easy blade positioning and excellent job visibility all help the operator do more work with less effort. The exclusive Caterpillar oil clutch operates smoothly many hundreds of hours without adjustment. Tubeless tires, at no extra cost, reduce tire down time. And in-cab starting, electric or gasoline, is standard.

Your Caterpillar Dealer not only sells these top-performance machines but takes a personal interest in protecting their long work life with reliable parts and service. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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Dept. CM&E-8, Caterpillar Tractor Co.
Peoria, Ill.



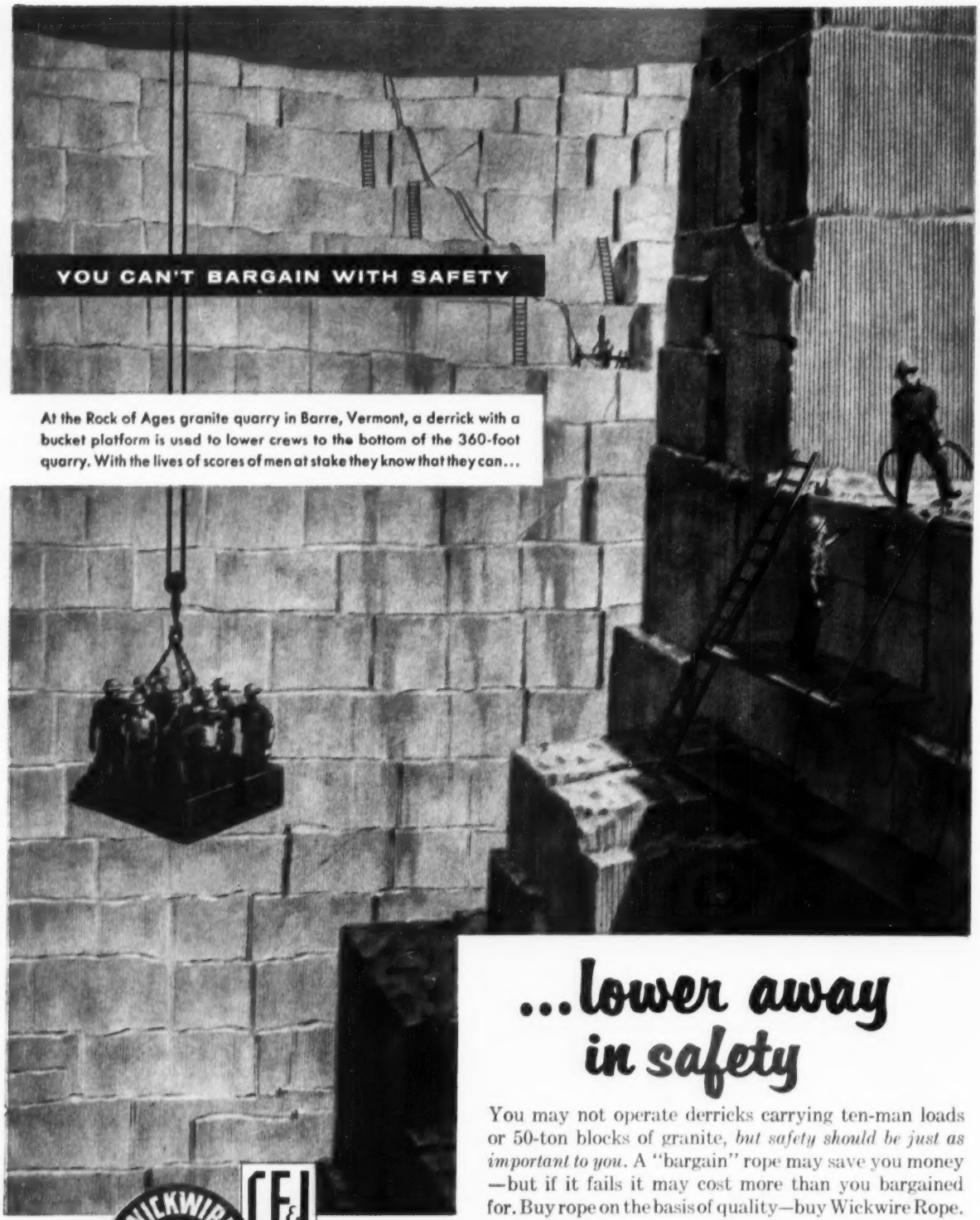
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At the Rock of Ages granite quarry in Barre, Vermont, a derrick with a bucket platform is used to lower crews to the bottom of the 360-foot quarry. With the lives of scores of men at stake they know that they can...

...lower away in safety

You may not operate derricks carrying ten-man loads or 50-ton blocks of granite, *but safety should be just as important to you.* A "bargain" rope may save you money —but if it fails it may cost more than you bargained for. Buy rope on the basis of quality—buy Wickwire Rope.

CF&I

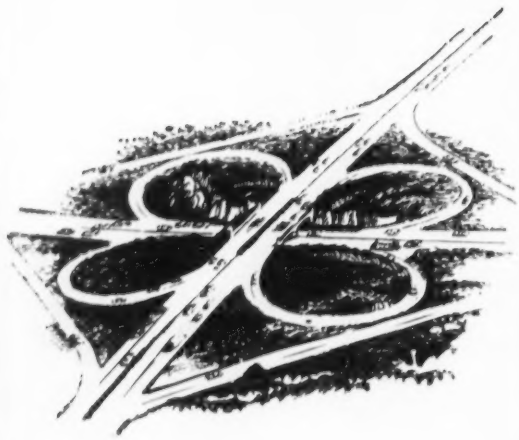
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LOOK FOR THE YELLOW *TRIANGLE*

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3,000 lbs. — 5,000 lbs.
for culverts and
light wall forms

RICHMOND
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for heavy wall forms



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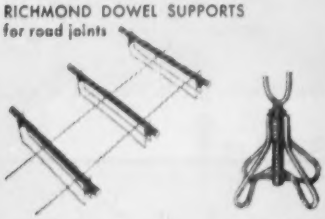
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for road joints

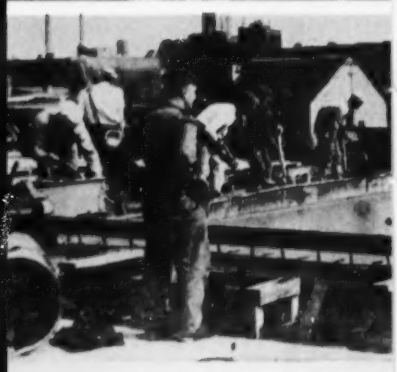
RICHMOND
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for screeding deck slabs











Shown here are a few of the items in the complete line of Richmond-engineered form-tying, anchorage and accessory devices for concrete construction. The Richmond Handbook describes all of them, gives wire and steel sizes used, safe loads and ultimate strength values. There is a Richmond product for every concreting need.

For your copy of the current handbook — or for help on a specific problem — write to: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N.Y. or 315 S. Fourth Street, St., Joseph, Mo.

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Construction News From Washington

Washington, D.C.
November, 1957

Building Trades and Hoffa

Some construction unions are unhappy with the prospects of Teamster expulsion from the AFL-CIO. There's a chance several Building Trades unions may join the giant trucking union if the split finally comes.

Special sentiment for the Teamsters comes from those unions that have a four-way organizing and jurisdictional pact with the Teamsters—the Carpenters, Operating Engineers, and Laborers. This agreement is a big success in heavy construction, and none of the signatories would like to give it up. Maurice Hutcheson, president of the powerful Carpenters union, has spoken out publicly for the Teamsters—extending the olive branch to newly elected Teamster president James R. Hoffa.

Another factor is the recurring dispute over construction work in industrial plants. Industrial unions and the Building Trades are scrapping over who gets the repair and maintenance work in the plants. A series of peace-making attempts by AFL-CIO president George Meany have failed so far. If this problem gets worse, it could be a big factor in any bolt from the AFL-CIO by the Building Trades.

Squeeze on Radio

The Federal Communications Commission likely will call for public hearings within the next few months on a proposal to realign its special industrial radio service.

Heavy and highway contractors have a special stake in the proceeding. Associated General Contractors has filed a written petition with FCC opposing the changes which would:

(1) Abolish the service and replace it with a new one to be called the "Business Radio Service." The hitch is that anyone engaged in a lawful business enterprise would be eligible for a license, whereas in the existing industrial radio service licensees are high-priority interests with access to protected frequencies in the spectrum.

(2) Cut licensed stations to a maximum of 180 watts of power. Some are now much more powerful, using up to 500 watts.

AGC doesn't know how many of its members hold industrial radio licenses nor how much their capital investment in radio amounts to. But AGC spokesmen say the service is heavily used and is invaluable to highway and heavy contractors, especially as they move into remote sectors on major jobs.

Written comments are now all in. Next move is up to FCC, which can adopt the proposed changes without further ado but probably will direct that public hearings be ordered. Any final action looks to be several months away.

continued on next page

Looking Ahead

The Administration fears the possibility of a business slide next year—and, if it comes, construction could be one of the industries most affected.

But forecasts of what lies ahead for business are confused by the contradictory views of the Federal Reserve Board—which controls interest rates and the supply of money—and the White House economists who advise Pres. Eisenhower.

The Federal Reserve Board feels that inflation is still our number one economic problem, and that tight money should be the rule until the price level starts turning down rather than edging up. FRB regards the steady rise in the cost of living as the number one indicator and wouldn't mind seeing a slight business recession if that's necessary to "take the fire out of inflation."

On the other hand, the President's advisers fear that already-present signs of a business slide indicate that inflation is actually behind us. They say decisions should now be shaping up to offset a business slide. What they fear, more than anything else, is that a recession next spring and summer would put the Republicans in a bad light at election time next November.

The outcome of this controversy is something for contractors to keep an eye on. Private and public sources of heavy construction contracts will be watching for any change in policy that might mean lower interest rates. Should a lowering of interest rates appear likely, many borrowers would stay out of the money market temporarily, even if it meant postponing planned construction.

Atomic Construction

The flood of atomic power plant construction—estimated at $700 million as of the beginning of this year—may not be built for years to come. That's the outlook now, as project after project runs into a tremendous increase in costs.

The one power plant that's close to completion—AEC's plant at Shippingport, Pa., for Duquesne Power & Light—will bear a price tag of about $70 million. Original estimates were only $47.8 million.

Other projects, originally estimated to cost from $3.6 million to $55 million, are now estimated anywhere from 50% to 300% higher.

Most recent example: a plant for Hersey, Mich., first was estimated to cost $3.6 million; the price had risen to $5.5 million by August; and it has now gone up to $14.4 million.

Electric utilities, with atomic power facilities costing two to three times as much per kw as it costs to generate electricity in conventional coal-fired plants, are backing out of such commitments.

As private industry becomes more wary of such expansion, pressure will increase in Congress for a larger government construction program. Last year, the Democrats barely made a dent in the Administration's opposition to a large-scale federal atomic plant construction program.

MOVES 30% MORE PAYLOADS WITH "Euc" TS-24



"TWIN" HAULS 1000 YARDS A DAY ON 1½ MILE HAUL . . . UNDER MOST ADVERSE CONDITIONS

McDowell & McDowell of Nashville, Tenn. have the contract for 1,100,000 yds. of excavation for fill on an access road and building site for the Jackson Lock and Dam in Alabama.

Superintendent H. G. Thompson rates his Euclid "Twin" this way, "This Twin-Power Scraper has so much more power, it can operate over areas where other units need the help of push tractors to negotiate the quagmire conditions on this job." Outstanding work-ability of the "Twin" is proved by production records which show the "Euc" averages about 10 extra payloads per shift over other scrapers in this tough going.

The material is an unstable combination of saturated clay, silt and sand. The "Euc" loads in a 40′ deep pit, climbs the 11% grade and makes the 1½ mile haul to fill area over 40 times a day. Operator Carlton Sauls reports, "I can get out of the pit without any help while the other scrapers need a push every time."

"TWINS" ARE BIG PRODUCERS

The power (518 total h.p. from 2 engines), the two Torqmatics, all-wheel drive, one-man operation, 32 yd. heaped capacity, easy accessibility of major components, hydraulic operation—everything about the TS-24 "Euc" Twin-Power Scraper contributes to bigger production at lower cost! "Twins" rate high with everyone concerned . . . the contractor, the "super", the operator and the maintenance personnel.

Have your Euclid dealer show you performance data on the "Twin" and provide a production-cost estimate for your work. You'll see why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

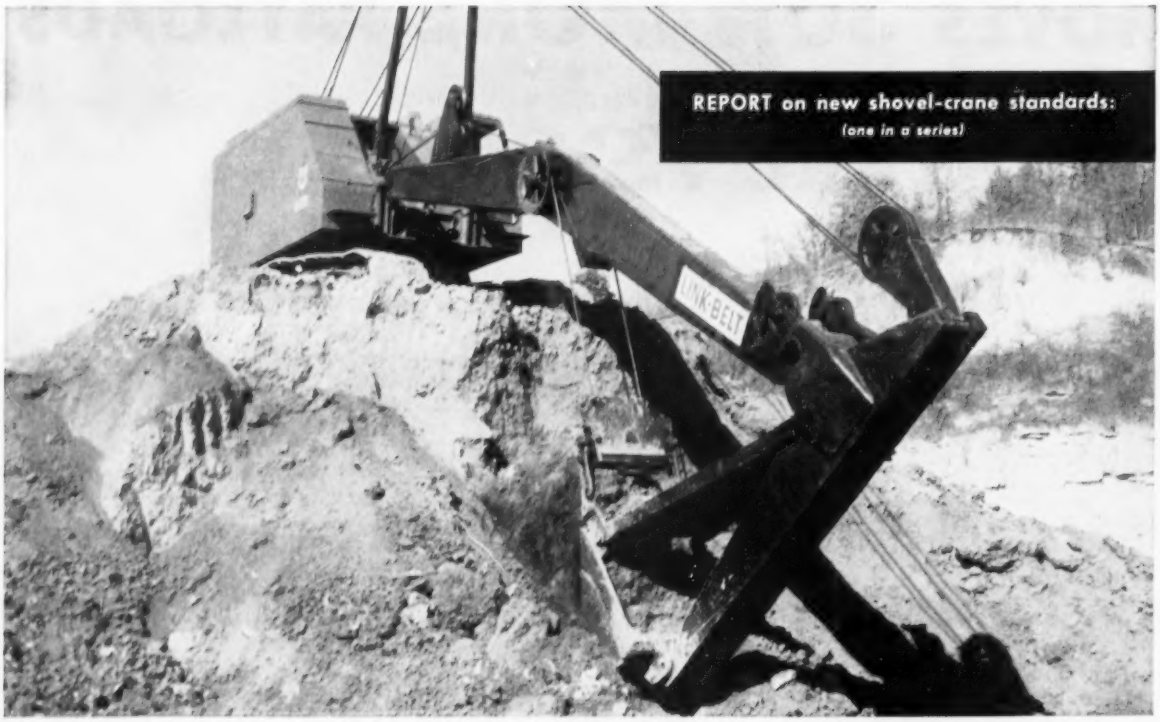


The greater all-around work-ability of "Twins" in any kind of scraper material, on long hauls or short hauls, on big projects or small jobs, enables them to work earlier as well as later in the season.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





Now from Link-Belt Speeder—a

new, high-speed 3-yd. hoe

Answers the need for an agile, mobile...more powerful, deeper digging...big-capacity hoe

Here's the largest production-model hoe in the industry! It's the same proven design as the highly successful K-608 shovel and dragline now available with a new 3-yd. hoe attachment. The hoe attachment has 30-ft. boom (maximum reach of 51½ ft.), and will dig to a depth of 31 ft., 10 in. Cutting width, with side cutters, is 5 ft.

Featuring a matched engine-torque converter package with output-shaft governor, the K-608 delivers power that is automatically and constantly matched to the load. Results—faster cycles, greater fuel economy, elimination of engine stallouts due to load.

Other features of this quality and precision-built hoe include bonus *usable* horsepower, hydraulic power steering, and hydraulic-actuated clutches that automatically compensate for heat and normal lining wear.

For comprehensive details, call your Link-Belt Speeder distributor or write: LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA.



FAST, NON-FATIGUING, POSITIVE CONTROL — Like all Link-Belt Speeder models, the K-608 features power hydraulic controls as standard equipment. A flip of a short-throw lever puts the K-608 through its paces. Response is fast, positive, smooth. Operator fatigue is practically eliminated. 14.651

It's time to compare...with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

A fleet of 5,000 vehicles



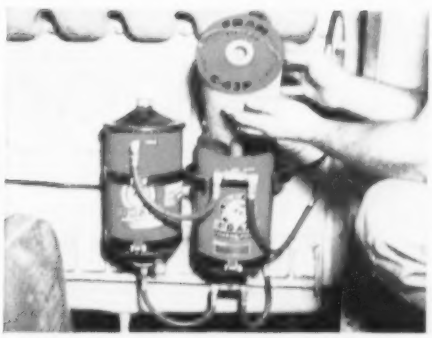
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OIL • AIR • FUEL • WATER

FILTERS



New light-duty Apache—Series 31 pickup

New Step-Van—One of three new Forward Control models in Apache Series

NEW 1958 CHEVROLET TRUCKS WITH

Just look at all they offer that's new and better . . . and you'll see why these new Chevies are the fleetest, sturdiest, handsomest dollar-savers yet! Meet Chevrolet for '58!

THREE NEW MODEL LINEUPS!

It's the biggest, most versatile Task-Force fleet yet—with an appetite for work to match! Every model sports fresh, broad-shouldered styling. And there's new hard-pulling power in every weight class, too—from the handy, handsome pickups to strapping tandems with GCW ratings all the way up to 50,000 lbs.

Just name your job. Your Chevrolet dealer will gladly name the new Apache, Viking or Spartan model to do it faster, easier and more economically than any other truck on the road!

NEW LIGHT-DUTY APACHES

Nifty, thrifty Apaches—built to outwork anything in their weight class—offer three completely new

SEE THE LATEST EDITIONS OF THE "BIG WHEEL" IN TRUCKS—



New heavy-duty Spartan—Series 90, L.C.F. model *New medium-duty Viking—Series 60 cab and chassis*

NEW HUSTLE! NEW MUSCLE! NEW STYLE!

Step-Vans equipped with walk-in bodies. The expanded lineup also includes high-capacity panels, pickups and four-wheel drive trucks—with a model tailored to take on your most troublesome delivery chores. There's new pep and power in any engine you pick, too—whether it's a 6 famous for economy or a short-stroke high-compression V8.

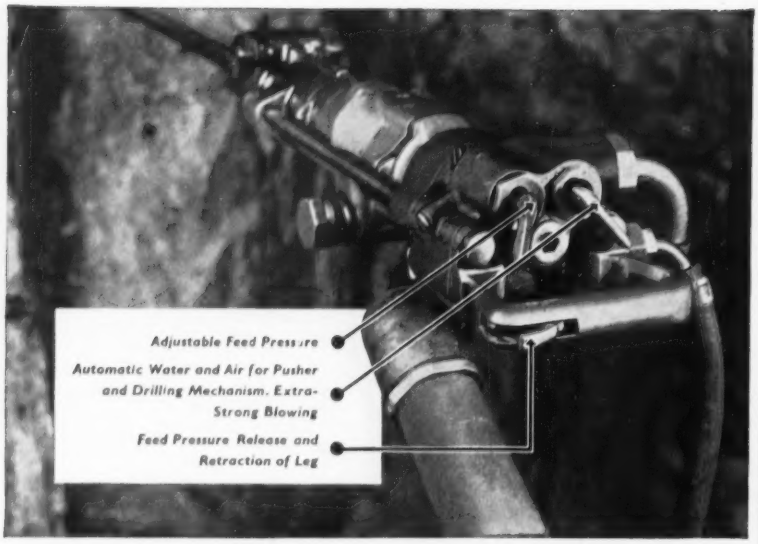
NEW MEDIUM-DUTY VIKINGS

Hardy, hard-working Vikings roll in with nine brand-new models, offering new cab-to-rear-axle dimensions for improved semi-trailer, dump, stake and van-type operations. Options available on these and most other new models boost GVW ratings all the way to 21,000 lbs.—as high as many competitive heavyweights. Yet you get traditional Chevrolet economy from high-compression engines that include the industry's most popular 6's and V8's packing up to 175 h.p.

NEW HEAVY-DUTY SPARTANS

The robust Spartans make hauling history with the most revolutionary truck engine in decades—the Workmaster V8 with Wedge-Head design. The combustion chambers are in the cylinder block! Featured in Series 90 and 100 heavyweights, this 230-h.p. engine achieves a new high in efficiency. There's also an 18,000-lb. rear axle to go with it, an optional high-tonnage 9,000-lb. front axle and cast-spoke wheels on every model. Look over Task-Force 58 at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1958 CHEVROLET TASK·FORCE TRUCKS! CHEVROLET



THE NEW

ATLAS COPCO LION

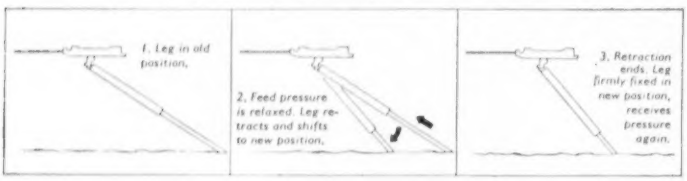
the most remarkable heavy-duty pusher-leg drill on the market

The Lion is the only rock drill with retractable leg operated from the back-head, which means quicker repositioning. It is also one of the very few drills on the market with all the operating valves controlled by one hand. Both these features make for great savings in time and manpower: in addition, the Lion has an especially high drilling speed compared with other drills in the same class.

THE RIGHT STEELS FOR THE LION

With the Lion choose Sandvik Coromant tungsten-carbide-tipped integral steels—the most widely used in the world—or Sandvik Coromant detachable bits and extension steel equipment.

PUSHER LEG ADVANCES WITH DRILL IN ACTION



Write, phone or cable today for further details to any of the addresses below:—

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ATLAS COPCO PACIFIC INC., 930 Brittan Ave., San Carlos, Calif. Phone Lytell 1-0375
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ATLAS COPCO MEXICANA S.A., Apartado Postal 56, Torreon, Coahuila. Phone 39-07

DST 87

Job Talk...



Skyscraper Model Previews Structural Details

A model of part of downtown Manhattan's largest office building project is under construction more than 30 mi from the financial district in a vacant lot near Garden City, Long Island.

The 40x80-ft structure, two stories high, is a full-scale "mock-up" of a portion of the new head office building of the Chase Manhattan Bank. It is being built for the bank's architects, Skidmore, Owings & Merrill, so that they and bank officials will have an opportunity to compare costs and see the effect of stainless steel versus aluminum as a skin material for the new building. Later the full-size model will be used for trying out lighting units, partitioning and other interior arrangements.

The model is being built by the Turner Construction Co., general contractor for the bank project, and will be completed in December. The structure is not a permanent addition to the Long Island scene. It will be demolished when it has served its purpose.

continued on page 28



TRUE, TIGHT JOINTS were obtained with Atlas Mortar cement in laying colored masonry units (8" x 12" x 3⅝") at McKinley Shopping Center, South Bend, Ind., according to masonry contractor Hugh M. Lee of Niles, Mich. General contractor, Paul Woodcox, Architect, Charles T. Donegan; both of South Bend.

ATLAS® MORTAR cement stays plastic and workable . . . spreads easily with less effort

- Field results consistently confirm that Atlas Mortar cement produces excellent mortar workability and also gives high yields.
- This mortar workability helps masons to produce serviceable, watertight masonry walls.
- Quality-controlled manufacture of Atlas Mortar cement maintains high product standards and assures uniform performance and appearance, job after job. (Complies with ASTM & Federal Specifications.)

Write for your copy of "Build Better Masonry," Universal Atlas, 100 Park Avenue, New York 17, N. Y. M-68

UNIVERSAL ATLAS CEMENTS

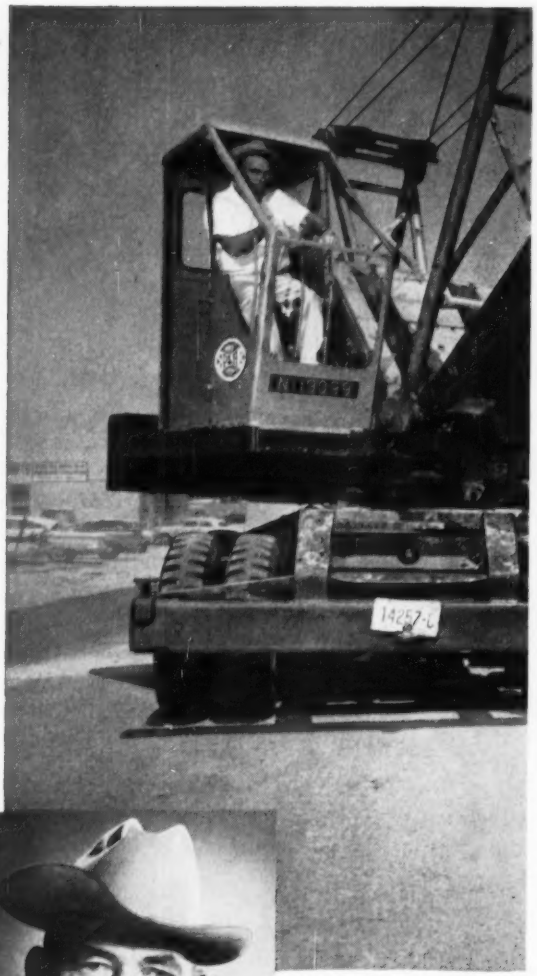
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UNIVERSAL ATLAS CEMENT COMPANY—member of the industrial family that serves the nation—**UNITED STATES STEEL**

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"With Transite ...we excavate, install the pipe and button up the trench fast"

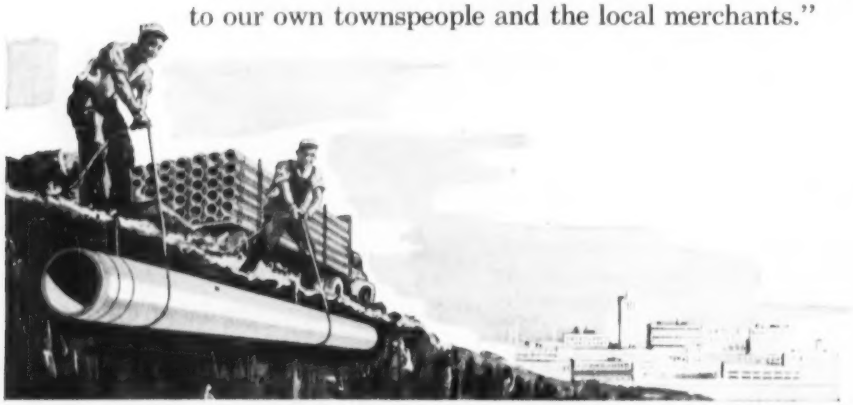
says Mr. Frederick J. Gallagher
F. J. Gallagher Trenching Co.
Tucson, Arizona





Photos by Ray Manley, Tucson

"By using Transite Pressure Pipe, we completed this 70,000-ft. water system contract several weeks faster than we had estimated. Transite's ease of assembly keeps our time and labor costs low. We excavate, install the pipe, and button up the trench fast. This speed is especially advantageous when we encounter cross service lines or are faced with bad weather. And always important, it means less annoyance to our own townspeople and the local merchants."



JOHNS-MANVILLE
JM
PRODUCTS



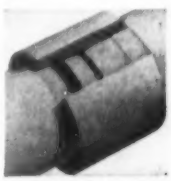
Crews of F. J. Gallagher Trenching Co. installing 14" Transite line in Tucson, Arizona

Transite Pressure Pipe keeps the job moving fast... with a good "tight" installation assured by its Ring-Tite Coupling!

Like Mr. Frederick Gallagher, contractors across the nation prefer working with Transite® Pressure Pipe because of its easy handling and simplified assembly. For both advantages help complete an installation fast—keep time and labor costs low!

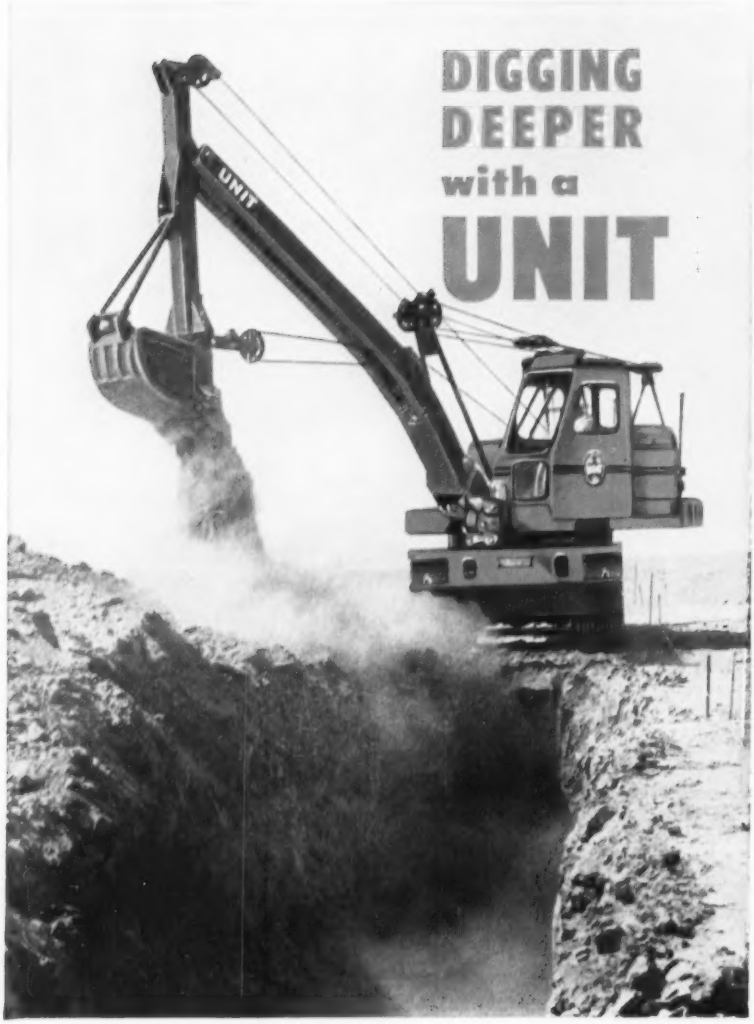
With Transite, you'll find your crews consistently keep right up with the excavator. Its lightweight, long (13') lengths and quickly assembled Ring-Tite® Coupling make their job easier, faster. Measuring for and digging of bell holes can be eliminated. There's no need for any but the simplest joining tools. And—all important—within the Ring-Tite Coupling, pipe ends are automatically positioned to allow for expansion.

We'll be pleased to send you booklet TR-160A. Write Johns-Manville, Box 14, N. Y. 16, N. Y.



Sectional view of Ring-Tite Coupling ▶ is cut away to show how rings are compressed and locked in grooves to provide *a tight, lasting seal!*

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Transite Pressure Pipe



You'll Dig More Jobs At More Profit With A UNIT TRENCHOE!

Accurate deep digging of trenches for pipelines, sewers, water connections, footings, basements and culverts is easily and quickly accomplished with a UNIT Trenchoe. The "Goose-neck" boom with its long deep reach assures maximum production. Also saves time trimming vertical sidewalls and corners, and in leveling floor surfaces. Powerful... Compact... Perfectly Balanced. Every UNIT is designed to meet the most rigid demands. Investigate today and earn more pay.

UNIT models are available in ½ or ¾ yard Excavators . . . Cranes up to 20 tons capacity . . . Crawler or Mobile types . . . Gasoline or Diesel. Ask for literature.

UNIT CRANE & SHOVEL CORPORATION
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UNIT CRANE & SHOVEL CORP. UNIT MILWAUKEE WISCONSIN

Geared to Produce Maximum Yardage



JOB TALK . . .
continued



New Radar Device Measures Long Distances

A new radar-type device for accurate measuring of distances has been acquired by the Collins Construction Co., submarine pipeline specialists of Port Lavaca, Texas.

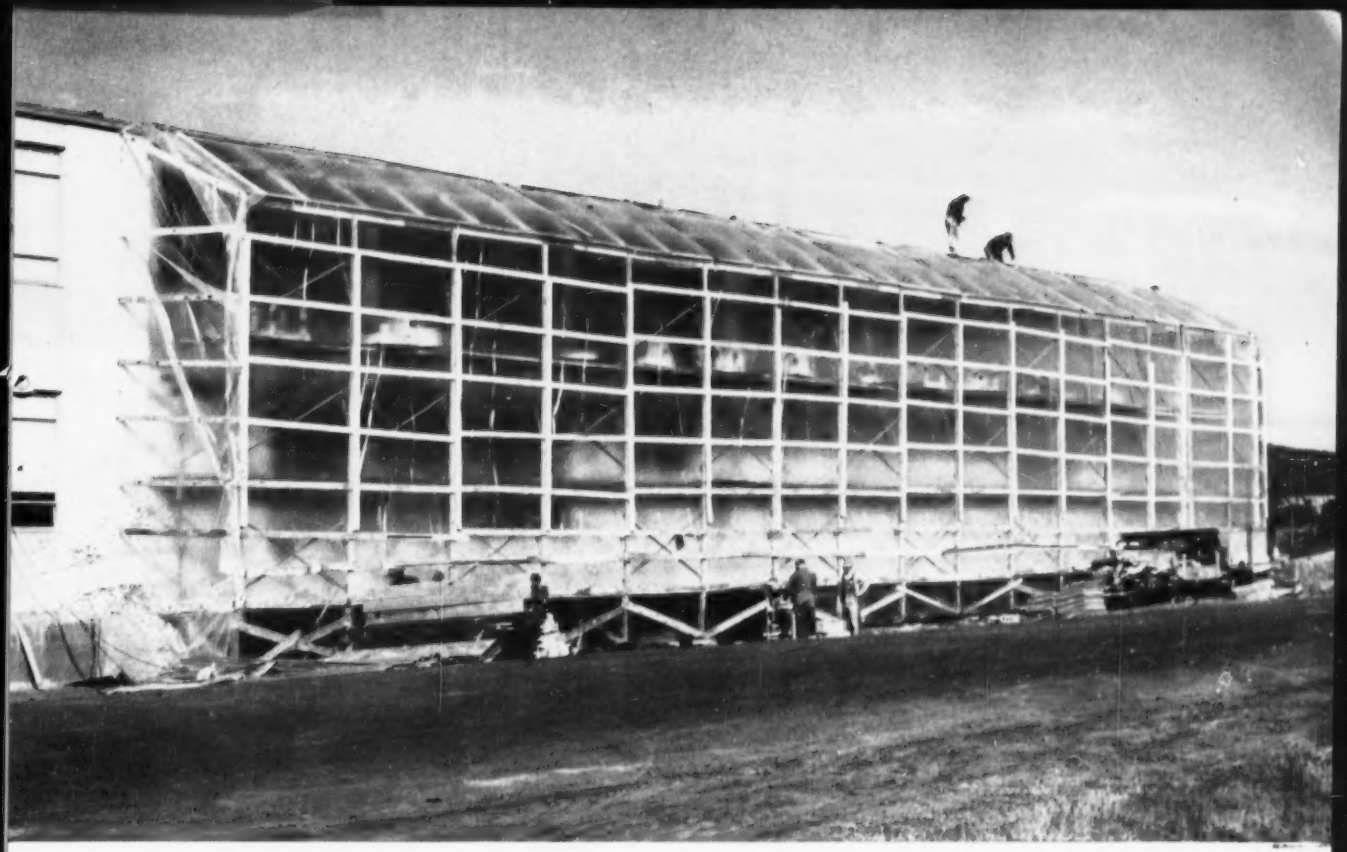
Known as the Tellurometer, the device is the product of years of research and development by the South African Council for Scientific and Industrial Research.

Measurements can be made by day or by night and visibility is immaterial. The probable error of the system is about three parts per million, plus or minus two in., on lines of any length up to 35 mi. This error would amount to less than 1 ft at distances up to 20 mi.

Consisting of one master unit and two remote or "slave" units, the system operates in the 10 cm wavelength region and measures the travel time of radio waves over the length to be determined with an accuracy of a fraction of a millimicrosecond.

Accuracy and simplicity of operation are two of the more important features of the system. Of rugged construction, the instruments are light, portable, easily erected, and dependable, allowing them to be used for long periods without undue problems of maintenance. The entire instrument pack weighs 57 lb.

Each of the three instruments in the system is equipped with carrying case, tripod, power pack, and standard 6-v battery. An operator is required for each



ADDITION to Guidance and Control Laboratory under construction at the Army Ballistic Missile Agency, with cover of VISQUEEN film. Outside temperature 30°. Inside temperature 68°. Heat source, two portable oil stoves and sunlight. Volume of enclosed space more than 100,000 cubic feet.

MASONRY CONSTRUCTION at Missile Agency Uninterrupted by Winter Cold

VISQUEEN film enclosure helps maintain 68° temperature within huge building area

Trade Mark

When unseasonable cold hit Redstone Arsenal last winter it threatened to stop urgent masonry construction for the Army Ballistic Missile Agency. Butler and Cobbs, the contractors, whipped the problem with the aid of VISQUEEN film.

Job superintendent C. B. Miller rented portable scaffolding, covered it with 100′ x 28′ sheets of VISQUEEN film, had the masons working after a delay of only five hours.

Two small portable oil stoves, plus the warmth of the sun, maintained comfortable working conditions, even when other masonry construction at the arsenal was suspended because of cold.

Be ready for winter emergencies. Don't let the weather stop you. A small investment in VISQUEEN film pays handsomely. See your dealer or send information request tag to VISKING COMPANY.

information request tag

VisQueen

Trade Mark

clip this tag—PRINT

attach to letterhead, mail.

VISQUEEN *film is all polyethylene, but not all polyethylene film is VISQUEEN. Only VISQUEEN film has the benefit of research and resources of VISKING COMPANY.*

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On the ILLINOIS TOLL ROAD...

"Eucs" outnumber* rubber tired

Euclid "Twin" Scrapers—42 of them—are proving that they move the cheapest dirt on all lengths of haul and under every job condition.



"Euc" Loaders and Bottom-Dumps are being used by several contractors on the Illinois Toll Road—they're a "natural" where big yardage must be moved in a hurry.



With a heaped capacity of 32 yds. and a total of 518 h.p., the TS-24 Euclid "Twin" outproduces any other scraper—moves more yardage at lower cost and gets more work done faster.



SUCCESSFUL BIDDERS FIGURE ON "EUCS"



Over 200 Euclid Scrapers, Bottom-Dumps and Rear-Dumps . . . plus 16 big TC-12 "Twin" Crawlers . . . are already on this "Road Show".

all competitive equipment combined

THERE'S keen competition among contractors for highway work — that's why you'll find Euclid earthmovers the outstanding equipment choice on jobs like the Illinois Toll Road. With their low cost, high production performance, "Eucs" provide a bidding advantage as well as protection for the contractor's profit margin. In spite of delays by weather and tough working conditions, over 225 "Eucs"— scrapers, bottom-dumps, rear-dumps and crawlers—are piling up yardage to help get the earthmoving done on schedule.

The performance of Euclid equipment on the Illinois Toll Road, as on most other major earthmoving projects in the last 20 years, is one of the many reasons why owners say from experience ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

These contractors*—big and small —are using "Eucs" to make the dirt fly on the Illinois Toll Road:

Arcole Midwest Corporation
L. G. Arnold & Griffith & Sons
Carl Bolander & Sons
C.K.G. Associates
L. F. Fleming Co.
S. J. Groves & Sons Co.
James Peterson & Sons Co. and Kluck Construction Company
Lakeside Construction Co.
McCarthy, Mass & Dillon
Ralph Myers Contracting Corp.
O'Neil and Winkelman
Orr Construction Co.
Rockford Blacktop Const. Co.
Ryan Brothers Co.
Ryan Construction Co.
Western Contracting Corp.
W. M. Wyant Co.

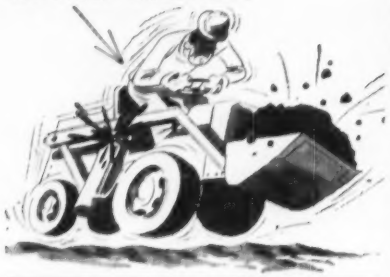
*As of August 1, 1957

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



From this...



to this...



with this!



PATENT PENDING

A Low Cost Greer Damper Makes the BIG Difference!

NEW DAMPER ENDS DAMAGE FROM SHOCK!

Don't let **shock** steal your production and profits! Install the new **Greer Damper** easily, quickly and at low cost...then see and feel the big difference!

Longer Life for Bucket Loader! **Greer Damper** eliminates harmful shock that damages cylinders, hose, packings and causes structural strain. Parts last longer, perform better! Cuts downtime and maintenance. Reduces operating costs.

Up Driver Output! More work per loader! **Greer Damper** frees driver from tiring effects of heavy shock and vibration. Adds to his comfort, safety, and working efficiency!

Get Smoother, Faster Operation! Your jobs are done faster than ever before. A **Greer Damper** s-m-o-o-t-h-s the road for greater on-the-job speed. Means more profit for you.

SEE YOUR BUCKET LOADER DEALER

for Greer Bulletin 1200 for full details, or write: **Greer Hydraulics Incorporated, Jamaica 30, N.Y.**

JOB TALK...
continued

instrument during operation.

In setting up for operation, each instrument is mounted on a tripod and approximately aligned with the "opposite" station. Procedure is controlled by the operator at the master station by means of a built-in two-way short wave radio system. Operating procedure consists primarily of tuning adjustments and a switching sequence with readings being taken from the master unit. These readings are converted into feet or meters for all practical applications.

Measurements are made quickly. In fact, 30 min is more than adequate, including unpacking, setting up, taking meteorological readings, and repacking the equipment. The Tellurometer will operate successfully at any distance from 500 ft to 40 or 50 mi.

To measure a single line, one master station and one remote station are necessary. If a number of remote stations are employed, a number of lines may be measured from the master station during one operation.

Mobile Rig Quickly Cuts Holes in Slab

A mobile drill rig did a fast job of cutting 150 holes in a 10-in. concrete slab on a reconstruction job in St. Louis, Mo. With a Trucso diamond-studded drill, Sachs Electric Co. could drill a clean, smooth 3½-in. hole in 6 to 9 min. depending upon whether or not reinforcing bars or conduits had to be cut. Hammering and chiseling was eliminated, there was no break-out around the edges, and no big clean-up job.

A 110-v machine, the drill was designed for fast one-man operation. Easy to set up, it was equipped with a telescoping post that anchored it firmly between the floor and ceiling. Drilling was simply a matter of advancing a motor carriage along a traverse bar.

To eliminate the problems of water supply, Sachs rigged up a recirculating water tank from a standard 54-gal oil drum, a galvanized bucket, pipe, and 10 ft of ordinary garden hose, all carried on a small platform truck.

Neenah FOUNDRY COMPANY

construction castings

of sound quality... solid value



Patterns for
15,000 different Grey Iron Castings for

- **Highway** • **Building** • **Communication**
- **Utilities** • **Industrial** • **Public Works**
- **Airport** • **Municipal** • **Transportation**

Write for our 135-page
Catalogue "R," Second Edition

Neenah FOUNDRY COMPANY

NEENAH, WISCONSIN — **CHICAGO OFFICE** 5445 North Nova Ave. Chicago 31, Illinois

NEW NEW NEW NEW NEW NEW NEW

Here's a NEW mobile moneymaker for YOU!

BUCYRUS ERIE

11-B

TRANSIT MACHINE

⅜-YD. excavator

10-TON lifting crane

HOE
CRANE
SHOVEL
DRAGLINE
CLAMSHELL



FAST-MOVING • HARD-WORKING • EASY-TO-MAINTAIN

TURN PAGE

HERE'S WHY THE NEW 11-B BOOSTS YOUR PROFITS...



★ **Rugged 6x6 carrier** with 6-wheel drive and 6-wheel Hydrovac service brakes assures fast, mobile performance on scattered-job schedules. It travels at speeds up to 47 mph.

★ **Five front ends, easily converted,** provide dependable versatility for a variety of excavating and crane work.

★ **Unit assemblies,** designed for easy replacement or quick service, minimize down-time and maintenance costs.

★ **Ball bearing swing circle** plus use of anti-friction bearings to mount all moving parts on revolving frame assure long wearability.

★ **Nylon pins and bushings** in operating lever system eliminate need for lubrication. In addition, all gears and pinions in main machinery (except the swing pinion and rack) are enclosed and run in oil.

★ **Long range hoe front end** for a ⅜-yd. machine provides extra reach. New type pitch brace attachment automatically changes dipper pitch for best digging and dumping angles.

★ **Two-section cab design** includes sliding doors and hinged, removable cab panels for easy accessibility to main machinery. Roomy, comfortable operator's cab is equipped with safety glass windows for full visibility in all directions.

NOW you can enjoy unmatched QUALITY at low cost

The new 11-B Transit Machine is ready to roll extra profits your way! You'll profit from the 11-B's simple compact design; from its versatility, accessibility and low cost maintenance. You'll find the 11-B provides the speed and mobility to handle scattered jobs profitably. It is economical to operate, too.

What's more, you can now own a low-cost carrier-mounted ⅜-yd. machine designed as a highest quality product in every respect. See your nearby Bucyrus-Erie distributor for all the facts on this fast-moving new moneymaker or send for complete information direct.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen: Please send me details on the new 11-B.

name _____

organization _____

address _____

city _____ state _____

send for complete facts NOW

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

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LITHO IN USA 0&J 57

(Advertisement)

Are engineering manpower shortages delaying highway construction progress in your work area?

Eastshore Freeway, Alameda County, California



The new highway program is off to a slow start for a number of reasons. One of them is the essential time lag in translating highway programs and surveys, into detailed highway construction plans and staked right-of-way.

Here are some suggestions for modern mechanization to save manpower and speed-up engineering, as made by Robley Winfrey, Chief, Personnel and Training, Bureau of Public Roads. The list is quoted as published in the Highway Program Newsletter:

- Aerial surveying and photogrammetry as aids to location, map making, and design.
- Electronic and other types of business machines for making all types of arithmetical calculations and arrangements of data.
- The self-leveling level and other recently developed types of surveying instruments.
- Standard plans and standard portions of plans.
- Photographic processes of printing plans to save both time and expense over the time-honored blueprinting process.
- Radio communication between headquarters and field personnel, and between field-project headquarters and mobile units on surveying, construction, and maintenance.
- Longer mileage projects under one contract.
- Design tables to save calculation time.

Perhaps you can further some of these time-savers. If you have other practical ideas for speeding up the progress of the road program, write us with your suggestions. We'll be glad to give all suggestions received careful consideration and see that they are suitably compiled and summarized. They will then be submitted to the Bureau of Public Roads for possible action through their departments. They will also be published in our national advertising as of general interest to the highway industry. Address your letters to Merle Yontz, President.

1679-DC-1

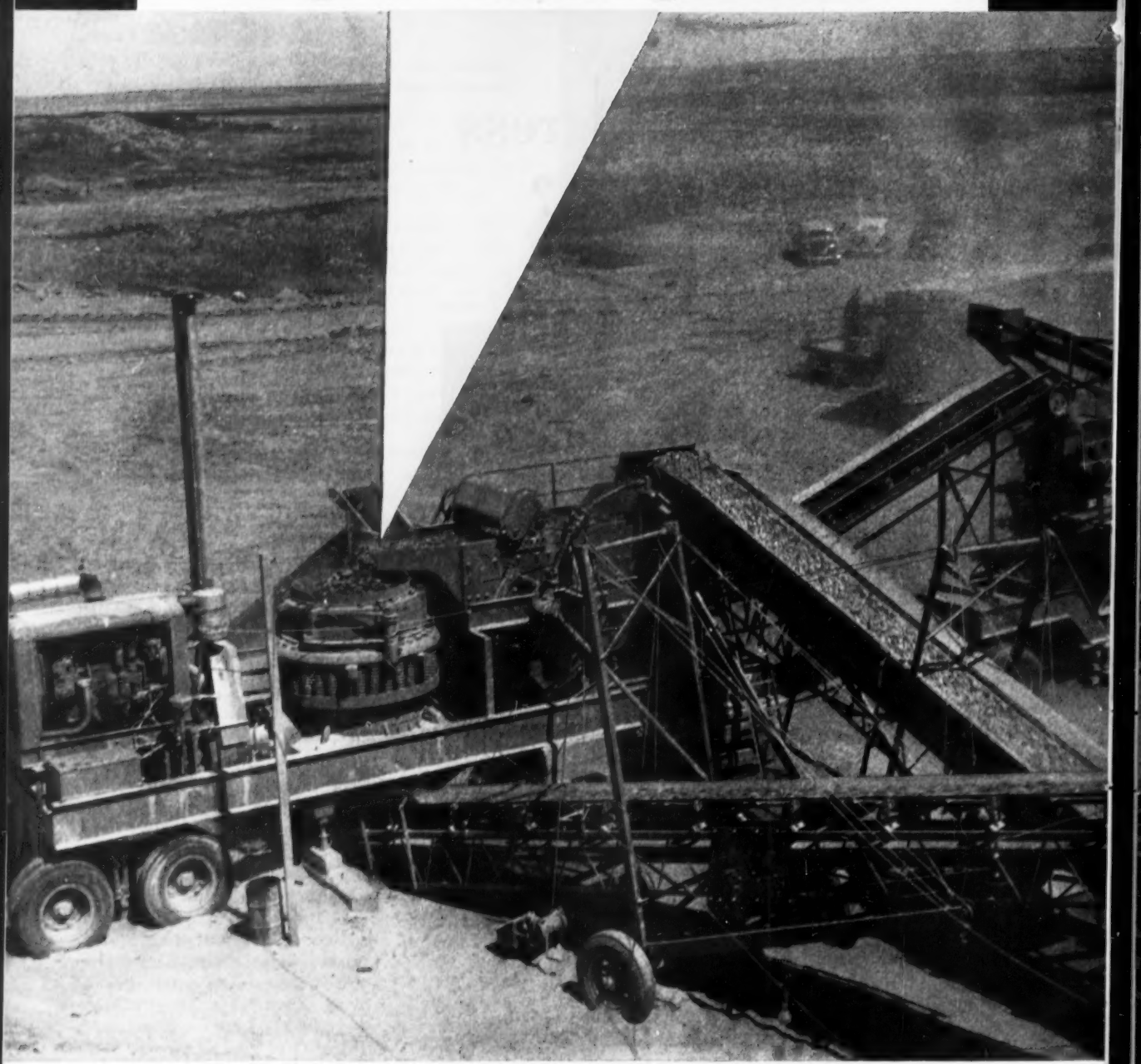
LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Co.

SYMONS®

CONE CRUSHERS
in portable plants





SYMONS PRIMARY GYRATORY CRUSHERS



NORDBERG GRINDING MILLS



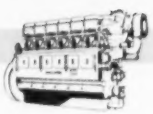
SYMONS VIBRATING GRIZZLIES



SYMONS VIBRATING SCREENS



NORDBERG KILNS DRYERS, COOLERS



NORDBERG ENGINES

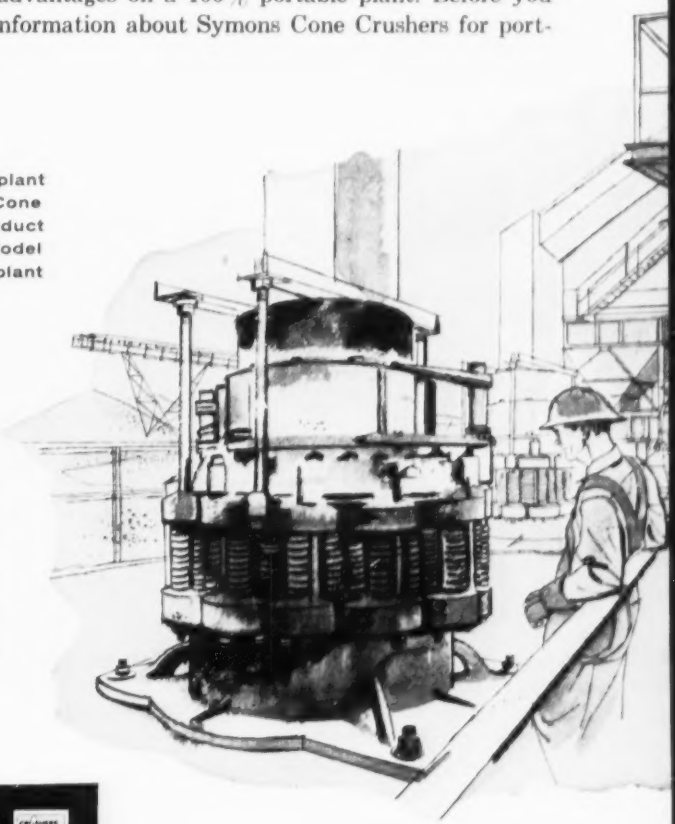
...a Profit-Making Combination for the BIG JOBS ahead

When you combine the proven ability of Symons Cone Crushers to produce big capacity of accurately sized product, together with the complete mobility of a portable plant, you gain many of the advantages of stationary plant operation that you can take right to the job. That's the combination that helps you beat competition and make more money on the big jobs ahead.

Here's where portability pays off—With the plant working close to a big dam project, concrete construction job or airport project, you cut hauling costs and save time. On roadbuilding contracts, the portable-mounted Symons Cone Crusher often can move to the job site, or move from pit to pit to take advantage of better material or more favorable crushing percentages. On bituminous concrete jobs, you can supply specification material to asphalt plants from convenient, near-by locations.

Symons Cone Crushers are known throughout the world for efficient, low-cost performance and high capacities of uniform fine-crushed products . . . and now you can have those profit-boosting advantages on a 100% portable plant. Before you submit your next bid, get full information about Symons Cone Crushers for portable plant service.

(Left): Increasing numbers of portable plant operators are now using Symons Cone Crushers for big capacity of fine product . . . such as this efficient Cedarapids Model 4-ICS portable intermediate crushing plant utilizing a 4′ Symons Cone Crusher.



— AND FOR STATIONARY PLANTS

Symons Cone Crushers are the choice of leading producers throughout the world for secondary and finer reductions in all types of ore and mineral processing operations. Available in both Standard and Short Head types, Symons Cones are built in sizes from 22″ to 7′ in diameter, for capacities of from 6 to 900 or more tons per hour. *Write for literature.*

C357

NORDBERG MACHINERY

NORDBERG

CRUSHERS SYMONS SCREENS NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON
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SYMONS . . . A REGISTERED TRADEMARK KNOWN THROUGHOUT THE WORLD

NORDBERG MFG., CO.
Milwaukee, Wisconsin

(Advertisement)



500′ (IN 30′ DEPTHS) PER 8-HOUR SHIFT in limestone, with 2 heavy-duty wagon drills and efficient Jaeger "600" air power. Drilling is done in 2 lifts, first to 20′, then a final 10′ lift. Lewisburg Limestone Co., Lewisburg, Tenn.

Jaeger 600 "far more efficient", *says quarry operator*

Powers 2 heavy-duty drills averaging 500′ per shift in limestone; engine speed under 1650 rpm

It takes plenty of constant 100-lb. air to power 2 heavy-duty wagon drills logging a fast 500′ in limestone, each 8-hour shift. This Jaeger "600" rotary does the job for Lewisburg limestone, with ample air reserve, at easy, fuel-saving speeds that never reach 1650 rpm. This economical, slow-running performance cuts fuel costs, saves wear and tear on engine and compressor. "Far more efficient than the compressor it replaced," reports Lewisburg Limestone.

A Jaeger Roto "600", using the same Model 6-71 GM diesel engine, produces the same 600 cfm of air as other "600" compressors at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800). You cut fuel costs, reduce fpm of engine piston travel and save up to 9000 revolutions every hour you operate a Jaeger "600". Smaller Roto Air-Plus® units (125, 250 and 365 cfm) have the same slow-speed, high-efficiency performance.

It will pay you to get full details and prices from your Jaeger distributor — or ask us to send Catalog JCR-5.



MAKING LITTLE ONES OF BIG ONES: Jaeger "125" rotary keeps this hand-held rock drill operating at full efficiency by producing 125 cfm of 100 psi air at only 1700 rpm, instead of the usual 1800. You save the difference, in fuel and wear.

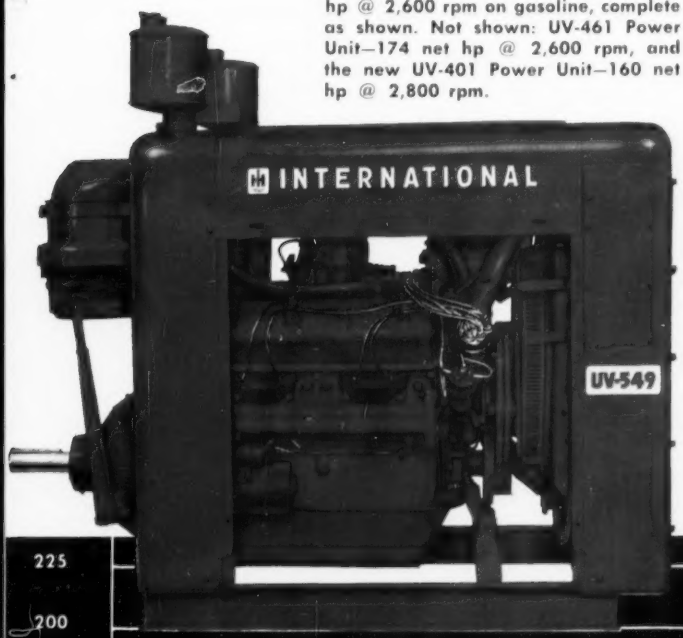
THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • SPREADERS • FINISHERS • TRUCK MIXERS

NOW..3 new International V-8's

Now you have an even wider selection of economical International gasoline or LP-gas power for your driven machines—three new power-packed, compact V-8's—the UV-549, UV-461, and the UV-401.

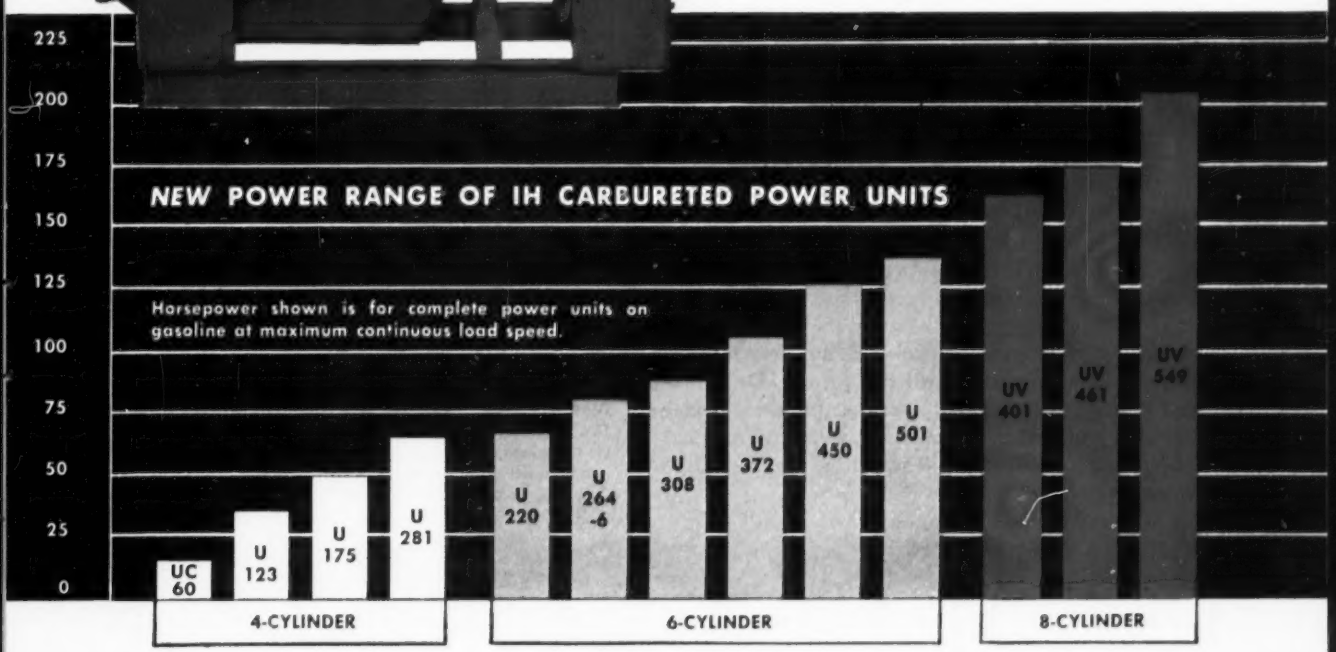


NEW V-8 UV-549 POWER UNIT. 208 net hp @ 2,600 rpm on gasoline, complete as shown. Not shown: UV-461 Power Unit—174 net hp @ 2,600 rpm, and the new UV-401 Power Unit—160 net hp @ 2,800 rpm.

These new models increase the International carbureted line to 13 models ranging from 16 to 208 hp on gasoline at continuous rated rpm, complete with regular accessories, fan and radiator. As stripped engines, they develop from 17 to 257 hp. LP-gas power is approximately the same as gasoline.

And just look at the standout V-8 features that help you cut your operating costs: rigid, Y-shaped block; short-stroke, heavy-duty, camground, 4-ring aluminum pistons; big, smooth-running, counterbalanced, tocco-hardened, 5-bearing crankshaft; large-area, long-life, trimetal, replaceable bearings; combination full-flow, by-pass filter for long-life pressure lubrication; full-power, down-draft carburetion; oil cooler; and a 12-volt electrical system.

See the man who can expertly fit one of these 13 extra-value carbureted engines to your job—your nearby International Power Unit Distributor or Dealer. You'll discover his after-sale service, his shop and field service facilities, his parts stock is outstanding in the industry.



INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Power Units . . . Motor Trucks . . . Farm Tractors and Equipment.

These TD-24 full-time

let you run power circles

Exclusive, all-weather, seconds-fast International gasoline coversion starting. Direct combustion heat conditions the TD-24's engine, seconds-fast—for full diesel performance. You avoid the warm-up delays and service complications of a surplus starting engine—earn money while "slow starters" are warming up!

Exclusive International Cerametallic-faced engine clutch action. The TD-24 is the only king-sized crawler with this big feature. Immune to heat and cold, this long-lasting clutch gives full-load power-transfer efficiency—anywhere, anytime! This dry-type clutch of simplified design eliminates "high frequency" servicing demanded by clutches with "cooling systems."

Exclusive, years-proved Planet Power steering. Why put up with load limiting "dead track drag" on the turns in a king-sized steering clutch crawler? Why not profit from TD-24 Planet Power steering that enables you to pull or push as big a load on the turns as on the straight-away? See how TD-24 two-track turning power never backs off from a load. "Take the turn" to new profits with Planet Power steering!

Exclusive cycle-speeding on-the-go shifting. In either Torque-Converter or Gear-Drive model, the TD-24 gives instant stall-preventing Hi-Lo shifting, without stopping or even declutching. Fingertip matching of speed to load under full power gets the job done sooner!

Exclusive TD-24 fingertip operating ease provides the operator comfort incentives and the means to give full days of full capacity cycle-speeding production!

Find out how these and all the other TD-24 production exclusives can equip you to run power circles around anything else on tracks. See your International Construction Equipment Distributor for a TD-24 demonstration!



Planet Power steering and Hi-Lo "power-crowd" keeps the TD-24 loading the "75" Payscraper® at top effective speed—adds up to increased daily yardage. Only 30 to 45 seconds needed to heap-load a "75" Payscraper—on this Dominic Leone Construction Co., Inc., Colorado road job!



production exclusives around "cycle-stallers"



Even with such offset loads as a boulder-bucking angled blade—benching a road round a hill—TD-24 Planet Power steering lets you concentrate the power where you want it. You stay on course—production stays up!

On slam-bang rock-dozing or moving other heavy materials, instant TD-24 Hi-Lo shifting adjusts tractor power to load resistance—increases production, avoids delay! And you get fast reversing to speed shuttle-dozing!



INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Don't let an old-style single-action loader

see how a 4-in-1 multiplies your

You've got a gun in your back two ways—with an old-style, single-action "dip-and-dump" tractor loader!

It holds you up on price, by giving you only the one machine action for your money. It hijacks your profits, by drastically limiting your job range and capacity.

Now, see what a contrast, in multiplied value and earning power, an International Drott 4-In-1 offers you!

4-machine utility... one-machine price!

An International Drott 4-In-1 gives you four built-in, multiple-duty, big-capacity machine actions, for only a one-machine price. Your fingertip command, through the "machine-selector" lever, instantly puts any 4-In-1 action you need at your service.

Skid-Shovel action gives you exclusive, "concrete-smashing" pry-action break-out—with famous bucket-heaping, ground-level roll-back. "Carry-type scraper" is your accurate grading, stripping, spreading, or compacting action. Clamshell action provides one-gulp "stand-and-fill" ability, plus hopper-high, self-cleanout, bottom dumping. Bulldozer action delivers aggressive, big-yardage, earth-rolling ability.

Ease into the foam-cushioned seat—prove that your 4-In-1 investment will multiply your job-taking, money-making ability. And compare the performance protection of exclusive shock-swallowing Hydro-Spring to unprotected hose-bursting, machine-mauling "lunge-and-lift" design. Ask your International Drott Distributor to demonstrate the top buy by far in the construction machinery world: the 4-In-1 size that fits your needs!





As a space-saving clamshell, this TD-6 4-In-1 "surrounds" a pile of loose dirt—gives speedy, space-saving "stand-and-fill" action. The 4-In-1 is backfilling, grading, and landscaping on the grounds of new Canisius high school, Buffalo, New York—for Michael Wagner & Sons, Inc.



International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

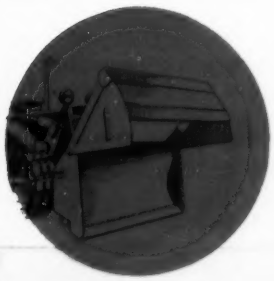
INTERNATIONAL®
DROTT®

hold you up...

profit-range by four

Doing as much as three power shovels and a dragline, this TD-18 4-In-1 dug up, and loaded, up to 1,700 feet of old concrete pavement daily—for Henry E. Berghuis, Prinsberg, Minnesota. Famous International Drott pry-over-shoe break-out action makes the big difference over other rigs!





Earth-rolling 4-In-1 bulldozing action saves Lotz Excavating Service, Chicago, Illinois, the time and expense of putting a blade-equipped unit on the job! See how their TD-14 4-In-1 strips heavy, hard-frozen sod from a homesite—to dig a 150 cu yd basement, in only 2¼ hours (average).



"Carry-type scraper" grading with inch-close accuracy is another job-getting 4-In-1 specialty that single-action rigs can't possibly do. This TD-9 4-In-1 is making big savings by putting new home landscaping on a "production-line" basis. You can also strip and spread with this easy-to-control action!





Rock-speeding Payhauler® features hit schedule-beating pace.....

ON US 27



The three-unit "65" Payhauler fleet of Greer Brothers and Young, highball 2,000 cu yd of rock 1,200 feet daily. Rock-moving climbed 'way ahead of schedule, on this U. S. 27 relocation job near Lincoln, Kentucky!

Both Payhauler sizes—the 18-ton "65", and 24-ton "95"—have built-in, schedule-beating performance!

Exclusive high reverse and "zip-around" power steering gives a Payhauler regular "pick-up truck" spotting ease. The "big-target" Payhauler body speeds the shovel's dip-and-dump cycle.

Load-matched and road-matched turbo-charged diesel power gives these heavy-duty, off-highway haulers super-fast get-aways. Next-to-automatic Payhauler control gives safe, capacity-adding speed—even over rough terrain! The "65" can roll at 36.4 mph; the "95" at 38 mph!

And the double-acting hydraulic hoist, *under full controlled power both up and down,* contributes cycle-speeding 10-to-12-second Payhauler dumping!...Extra speed on every job-phase adds up to extra profit-tons hauled!

See how a Payhauler on your job will give you a decisive, profit-margin of difference! See your International Construction Equipment Distributor for a demonstration!

Find out for yourself *all about* all the big-money-making Payhauler features. Send for your free copy of this new, fully-illustrated Payhauler catalog!



International Harvester Co.
180 N. Michigan, Chicago 1, Ill.

Gentlemen:

☐ I am a contractor. ☐ Am interested in becoming a contractor. ☐ Am an equipment operator (please check square that applies.) Send me Payhauler Catalog (CR-603-G)

Name_____

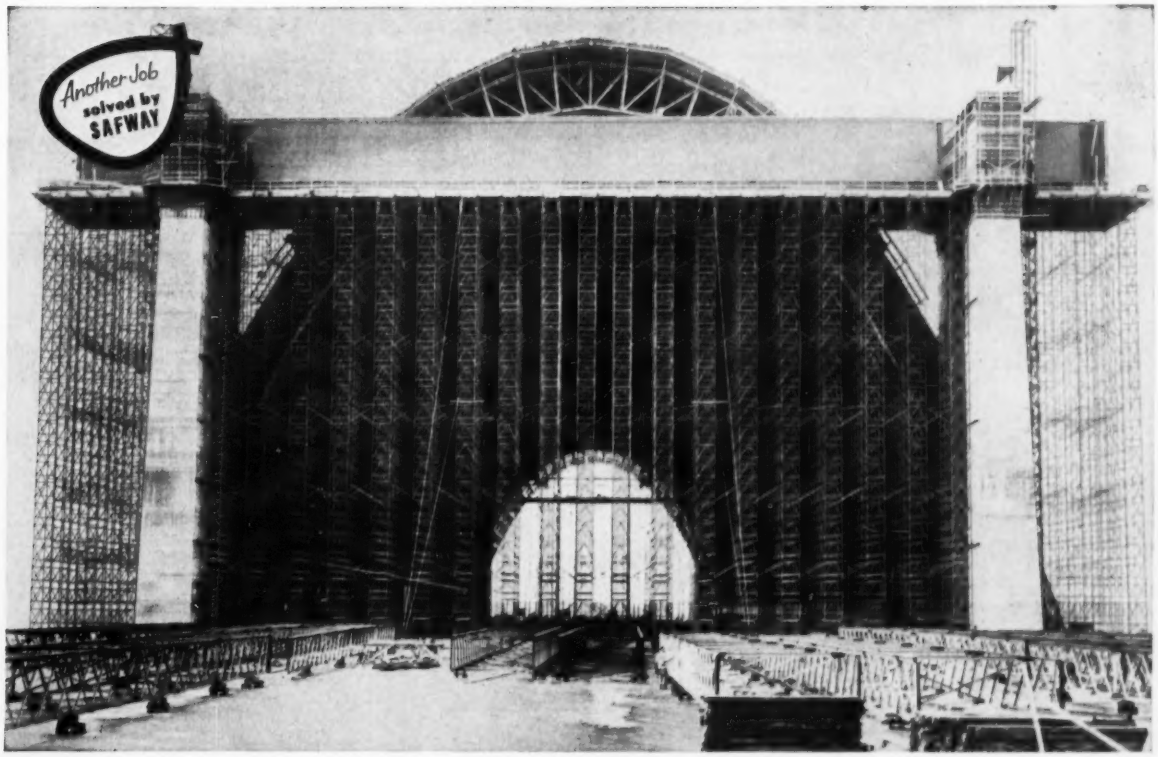
Street Address_____

City_____ State_____

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50 Safway Steel Scaffold Towers Support 20 tons Each on Naval Aircraft Hangar Job

How to Shore 500-ton Beams 120 ft. High

3,000 LB. LOAD IS SUPPORTED BY EACH STEEL SCAFFOLD LEG

NOT EVERY JOB calls for shoring two great 500-ton concrete beams at a height of 120 ft. But even when they do, you can solve the problem efficiently . . . *and at lowest cost* . . . with Safway Steel Scaffolding.

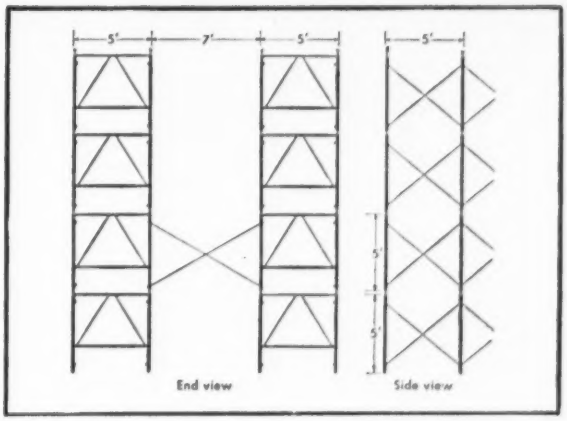
These beams are designed to carry heavy steel doors at each end of a U. S. Navy aircraft hangar. Each beam is supported by 25 Safway Scaffold towers which have a base area of 5 x 30 ft. The built-in strength of Safway frames plus engineered bracing made it possible for each tower to carry 20 tons. This amounts to almost 3,000 lbs. per leg supported 120 ft. high.

Adjusting screws at the top and bottom of each tower permit leveling the structure on uneven ground, and final setting of the formwork. They also simplify lowering and dismantling the formwork when the job is finished.

100% RECOVERY OF EQUIPMENT

Balanced Safway frames are easily handled by one man at any level. They go up rapidly to any height without a crane. Their capacity is definitely known. And when they are dismantled, you recapture 100% of your shoring equipment.

Safway scaffold engineers are available at any time to help you plan for both unusual and routine jobs. And you can always rely on your local Safway dealer to deliver an ample supply of Safway equipment . . . when and where needed . . . for *purchase* or *rental!*

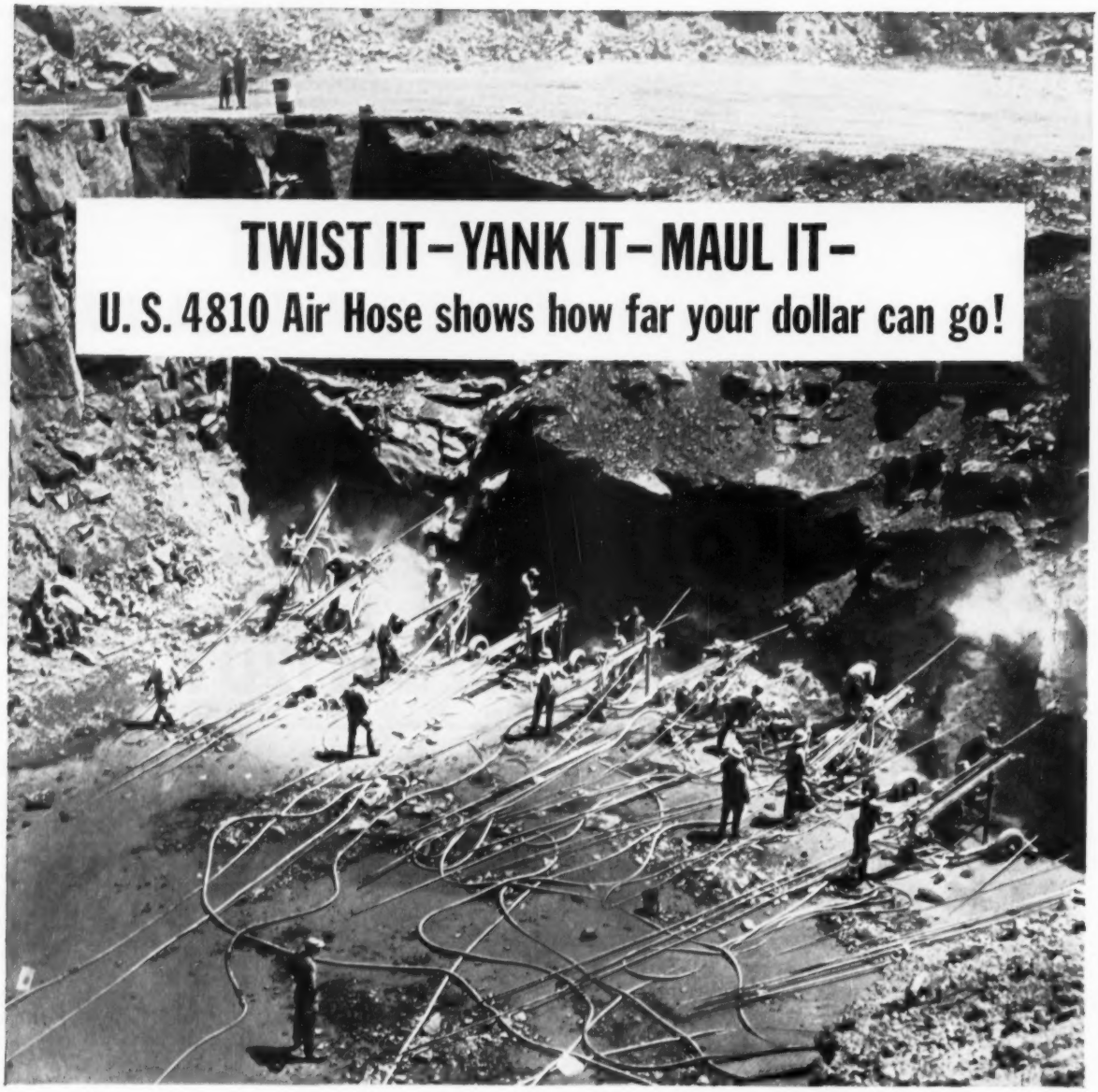


Each of the 50 scaffold towers is 7 frames deep, spaced at 5 ft. intervals. Additional bracing between towers unifies the structure, distributing shock loads evenly. Safway center-pivoted tubular steel cross braces square the shoring columns into rigid structural members.

CONSULT WITH SAFWAY—Shore all your jobs better —save construction costs! Submit details for Safway recommendations. And **WRITE TODAY FOR BULLETIN 211.**

SAFWAY
STEEL PRODUCTS, INC.
6243 W. State St., Milwaukee 13, Wis.

US RUBBER AIR HOSE



This is the hose recommended for all pneumatic tools and air drills – for use wherever high working pressures, abrasion and general abuse would wreck an ordinary air hose.

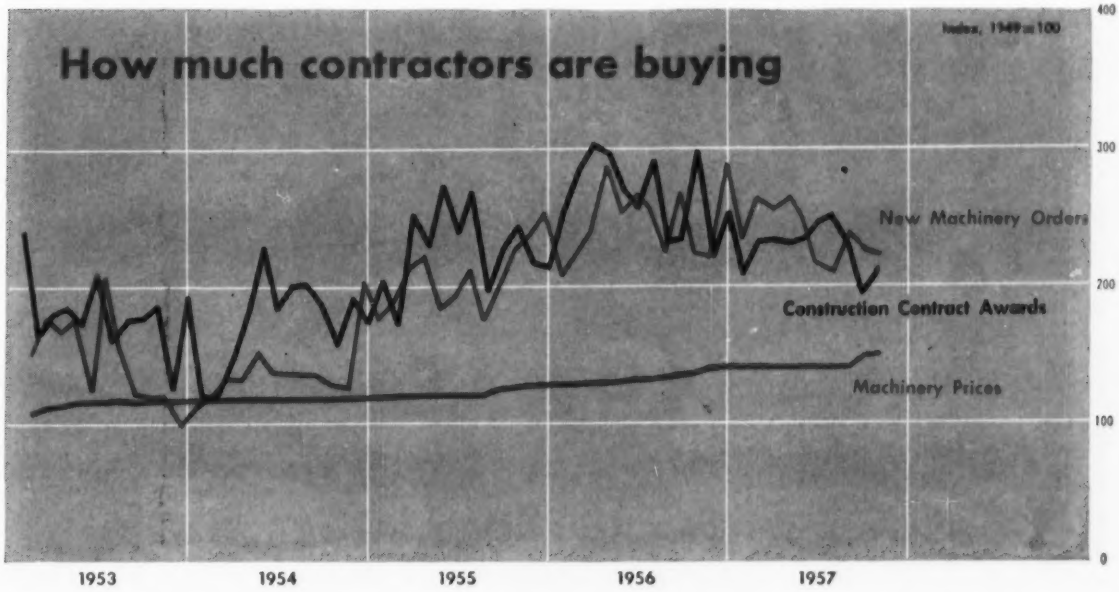
Heavy tools can drop on it. Pieces of rock from blasting can strike it. It can be pulled over jagged stones, grinding gravel – in all kinds of weather. *Throughout all this, U. S. 4810 stays unharmed, delivers full service.*

U.S. 4810 combines super adhesion and extreme flexibility. The rugged service that this hose provides throughout its long life proves that you are wasting dollars if cheaply constructed, short-lived air hose is being used instead of U. S. 4810 Air Hose.

A complete line of hose is obtainable at any of the 28 "U. S." District Sales Offices, at selected distributors, or by contacting us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

US RUBBER Mechanical Goods Division **United States Rubber**

Trends in the Machinery Market



Price Index

	SEPT 1957	MONTH AGO	YEAR AGO	PERCENT CHANGE 1956-57
All Types of Equipment	162.6	161.4*	151.5	+ 7.3
Cranes, Draglines, Shovels	**160.9**	**160.2**	**151.2**	**+ 6.4**
Shovel, ½ cu yd	152.9	150.9	143.9	+ 6.3
Shovel, ¾ cu yd	164.5	162.9	157.6	+ 4.4
Shovel, 1-1½ cu yd	174.8	172.4	161.8	+ 8.0
Shovel, 2 cu yd	147.1	147.1	137.3	+ 7.1
Shovel, 3-3½ cu yd	158.3	158.3	151.3	+ 4.6
Shovel, 6 cu yd	179.4	176.5	165.9	+ 8.1
Crane, truck mounted	162.1	162.1	157.5	+ 2.9
Bucket, clam shell	152.7	152.7	136.7	+ 11.7
Bucket, dragline	180.8	180.8	165.1	+ 9.5
Crane, tractor mounted	131.7	131.7	120.3	+ 9.5
Scrapers and Graders	**158.8**	**156.5**	**147.6**	**+ 7.6**
Scraper, 4 Wheel, 8-8.4 cu yd	155.0	155.0	145.2	+ 6.7
Scraper, 4 Wheel, 14.4-15.2 cu yd	151.3	151.3	136.0	+ 11.3
Scraper, 2 Wheel	118.4a	118.4a	110.5a	+ 7.1
Grader, heavy duty	164.2	161.6*	148.4	+ 10.6
Grader, light & medium	165.1	159.8*	145.0	+ 13.9
Tractors	**176.7**	**175.2**	**164.9**	**+ 7.2**
Wheel type, off-highway	122.1	122.1	113.7	+ 7.4
Crawler type, 37.0-45.1 dph	180.0	177.6	166.7	+ 8.0
60.5-75.0 dph	183.6	183.4	173.1	+ 6.1
102.0-116.0 dph	182.4	182.4	170.5	+ 7.0
126.0-155.0 dph	186.7	183.5	173.6	+ 7.5
Machinery, Tractor Mounted	**160.4**	**160.4***	**149.3**	**+ 7.4**
Dozer, cable control	151.6	151.6	152.1	— 0.3
Dozer, hydraulic control	175.1	175.1	157.6	+ 11.1
Cable, power control unit	147.9	147.9	135.0	+ 10.0
Loader, shovel type	151.8	151.8*	142.1	+ 6.8
Specialized Machinery	**146.3**	**144.8**	**137.9**	**+ 6.1**
Ditcher	154.1	151.8	143.6	+ 7.3
Roller, tandem	181.7	181.7	172.8	+ 5.2
Roller, 3 wheels	161.6	154.8	146.4	+ 10.4
Ripper and rooter	143.3	143.3	132.4	+ 8.2
Dewatering pump, 10 M gph	108.1	108.1	105.4	+ 2.6
Dewatering pump, 90 M gph	133.3	133.3	124.3	+ 7.2
Portable Air Compressors	**156.6**	**156.6**	**133.2**	**+ 17.6**
Contractors Air Tools	**164.3**	**164.3**	**150.0**	**+ 9.5**
Mixers, Pavers, Spreaders	**144.1**	**143.1**	**134.5**	**+ 7.1**
Mixer, port., 11 cu ft	152.6	151.7	145.3	+ 5.0
Mixer, port., 16 cu ft	157.1	153.6	144.8	+ 8.5
Mixer, truck, 4½ cu yd	122.1	122.1	113.7	+ 7.4
Mixer, paving, 34 cu ft	174.6	174.6*	153.7	+ 13.6
Concrete finisher	173.0	171.1	160.0	+ 8.1
Bituminous distributor	115.9	115.9	108.3	+ 7.0
Bituminous spreader	160.3	160.3	149.9	+ 6.9
Bituminous paver	149.8	149.8	143.9	+ 4.1

a Index based on January, 1955 = 100 * Revised
BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49 = 100

More Prices Go Up

The uptrend in construction machinery prices spread to more lines in September. Manufacturers marked price tags higher on 14 of the 40 types of machinery covered by BLS Wholesale (primary market) Price Indexes.

These increases push the overall machinery price index 0.7% above its August 15 value to a record high of 162.6 on September 15, based on average prices during 1947-49 as 100. The new value of the Index is 7.3% above a year ago.

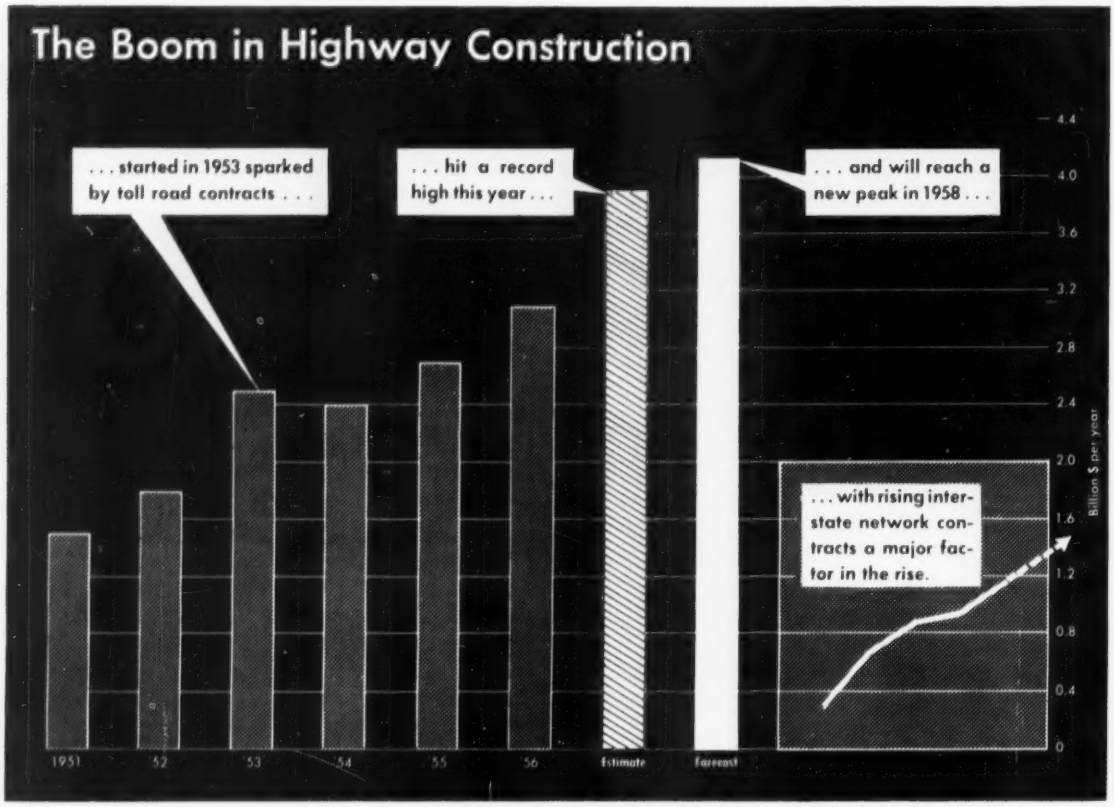
September price hikes hit four categories of machines which had been affected also by August price advances: heavy duty graders and three size ranges of crawler tractors.

Some power shovel prices increased in September, forcing four of six shovel price indexes up more than 1%. Indexes for portable mixers, three-wheel rollers, ditchers, light graders, and concrete finishing machines also moved up.

Widespread price advances since June 15 have caused a three months, 3.2% increase in the overall BLS Price Index.

For many types of machines, price hikes have been much greater than the 3.2% average. For example, portable air compressors climbed 7.1% and air tools climbed 9.5% between June 15 and September 15. Grader price indexes are up 8.5% for light and 6% for heavy types. Crawler tractor prices have risen 4% to 6%, and some types of scrapers increased 4% to 5%.

Bucking the general trend toward higher prices are these types of machines whose price indexes have been unchanged since June 15: bituminous distributors, spreaders, and pavers; 3- to 3½- yd shovels; truck cranes; clam shell and dragline buckets; tandem rollers; dewatering pumps; 4½-yd truck mixers; and four-wheel scrapers.



Beginning to Build Up Steam

START of the federally aided Interstate Highway Program 16 months ago marked the beginning of a new boom in highway construction. This new upsurge has pushed 1957 contract awards well above the level of the 1953-55 boom, which was based largely on extensive toll road construction.

But still many contractors and suppliers are disappointed with the rate at which the new boom is progressing. Is the new Interstate Program going to contract on schedule, or is it lagging? And how has this program affected contractors' new highway business?

Interstate highway awards will boost total highway contracts to a record total of about $4 billion this year, according to Construction Methods figures. This will represent a 27% increase over last year and a 46% jump over the value of awards in 1955, the year before the new interstate program started.

Only about one dollar out of every four represents interstate projects, however. U. S. Bureau of Public Roads reports that state highway department contract awards for the first eight months of 1957 (latest BPR figures available) totaled $665 million, 27% of total state highway contracts. Furthermore, these interstate awards account for nearly all of the 26% increase over 1956 in BPR's $2,387-million total for all state highway contracts let.

Interstate Awards Should Accelerate

The rate of interstate highway contract awards during the first eight months of 1957 clearly lagged behind plans reported by the states to Construction Methods last spring (CM&E, May, p. 57). At that time, 44 states and the District of Columbia planned to award $1,719 million this year for their sections of the interstate network. But these states awarded only $641 million during January-August, according to BPR figures.

If they were to push awards to bring the total up to their 1957 target, they would have to let contracts during September-December at triple the average monthly volume for the first eight months. Such a sharp rise in awards during the rest of this year is nearly impossible. But a further increase in the rate of interstate awards is probable.

continued on page 53



Four of many Caterpillar-built machines on the Great Falls Paving Project: two DW15 (Series E)-No. 428 LOWBOWL Scrapers, a D8 Tractor and a No. 12 Motor Grader. The blocks in this area of the project are 430 feet long, and the street width 35 feet. Excavation of heavy clay soil averaged 525 cubic yards a block here.

HIGH PRODUCERS IN NARROW STREETS

New CAT* DW15 (Series E)-No. 428 LOWBOWL Scrapers set fast pace on $4,186,721 Great Falls Paving Project

Four firms associated under the name of City Constructors were awarded the contract to handle the Great Falls Paving Project, Montana. The project involved the reconstruction of about 900 blocks. Among the new Caterpillar DW15 (Series E)-No. 428 LOWBOWL Scrapers on the job were these two units, owned by S. Birch Inc. & S. Birch & Sons Construction Co. Here you see them at work in heavy clay soil on a typical 35-foot-wide street.

The street was excavated to the depth of a foot for rebuilding. Loads were restricted to avoid damage to utilities and improved streets. Averaging 12 cubic yards a load, each unit made five trips an hour on a 3,000-yard round-trip haul through traffic.

This is just one of many jobs where the new DW15 (Series E) unit proved itself a high producer. In fact, in reports from other jobs, this point is clear: When the new DW15 is compared with competitive units of similar capacity, it leads the pack in performance. Many factors contribute to its superiority. For example, it has a high travel speed of 37.2 MPH with the stability of four wheels. Very maneuverable, it turns within a 35-foot diameter, and its stability permits short turns at high speeds. Its wide-section 26.5 x 25 tires provide maximum flotation. And the new No. 428 Scraper's LOWBOWL design means a faster loading rate clear to the end of the loading cycle.

The new DW15 (Series E) delivers 200 HP (maximum output capacity). The new No. 428 has a capacity of 13 cubic yards struck, 18 cubic yards heaped.

Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you cost-of-operation figures on actual jobs. Better still, name the date—he'll demonstrate, right on your job!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

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Here in one booklet is *all* the latest information on the new highway program. Find out how, where and when the money will be spent; standards for the new freeways; final routes of the Interstate System. Everything you need to know to share in the greatest construction job in history.



DEPT. CME-11, Caterpillar Tractor Co.
Peoria, Ill.

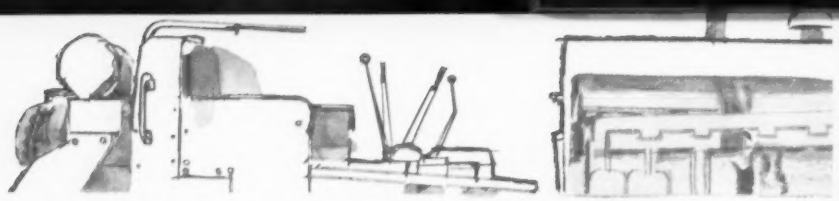
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Builds seven-billion-gallon reservoir so

H. D. Tousley Co., builder of Morse Reservoir, uses one source for petroleum products—STANDARD OIL

Two miles northwest of Noblesville, Indiana, H. D. Tousley Co. built Morse Reservoir for the Indianapolis Water Company, one of the largest privately owned water utilities in the country. The reservoir impounds Cicero Creek to create a seven-billion-gallon reserve water supply for the city of Indianapolis. It was a $6.5 million job. The contractor did it with one supplier of petroleum products—Standard Oil. This is one of the reasons Tousley uses Standard Oil products:

Standard Oil works direct with Tousley. On this job Standard Oil Company worked direct with the contractor. A Standard Oil bulk station only a few miles from the job made deliveries whenever needed, day or night. One of Standard Oil's 23 Division Offices located in Indianapolis gave help. Tousley maintenance men thus had no worries about service on diesel fuel, gasoline, motor oil, grease.

Lubrication technical service. Out of the Standard Oil Division Office, only 23 miles from the job, the Tousley Co. had the services of experienced lubrication specialists. On this project, Standard's chief automotive engineer and a lube specialist worked with job and equipment superintendents. They made a lubrication survey, recommended STANOLUBE HD-M Motor Oil and AMOCO* Lithium Multi-Purpose Grease for all equipment. They cut down the number of products Tousley needed to inventory, eliminated chance of application errors and saved the contractor money. The Tousley Co. has an impressive inventory of equipment—62 trucks and cars; 18 bulldozers, high-lifts and motor graders; 3 scrapers; 12 cranes and 12 air compressors. They stay in top condition because of the top maintenance given by the H. D. Tousley Co. and top lubrication technical service received from Standard Oil lube specialists.

Get this kind of service from Standard Oil anywhere in the 15 Midwest and Rocky Mountain states. Call your nearby Standard Oil office. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



F. E. Hull, Standard Oil chief automotive engineer (left), and M. B. Shookman, Standard automotive lubrication specialist (right), go over lubrication of Caterpillar drive with Tousley Co. maintenance superintendent, Jim Smith. Experienced Standard Oil men such as these give lubrication technical service to contractors. Forrest Hull has been doing this work for 13 years; Miles Shookman, for five years. Both men have completed the Standard Oil Sales Engineering School.





nobody goes thirsty in Indianapolis

Morse Reservoir built by H. D. Tousley Co. to insure Indianapolis a reserve supply of water. All equipment on this $6.5 million construction project used Standard Oil products.

Quick facts about Standard Oil products for construction equipment

STANDARD Diesel Fuels. Minimum-odor exhaust. Maximum engine cleanliness. Standard Oil handled from refinery to you.

STANOLUBE HD-M Motor Oil. Recommended for MS-DG Services. Refined from finest quality base stock. Additives prevent bearing corrosion, reduce piston varnish, keep rings free.

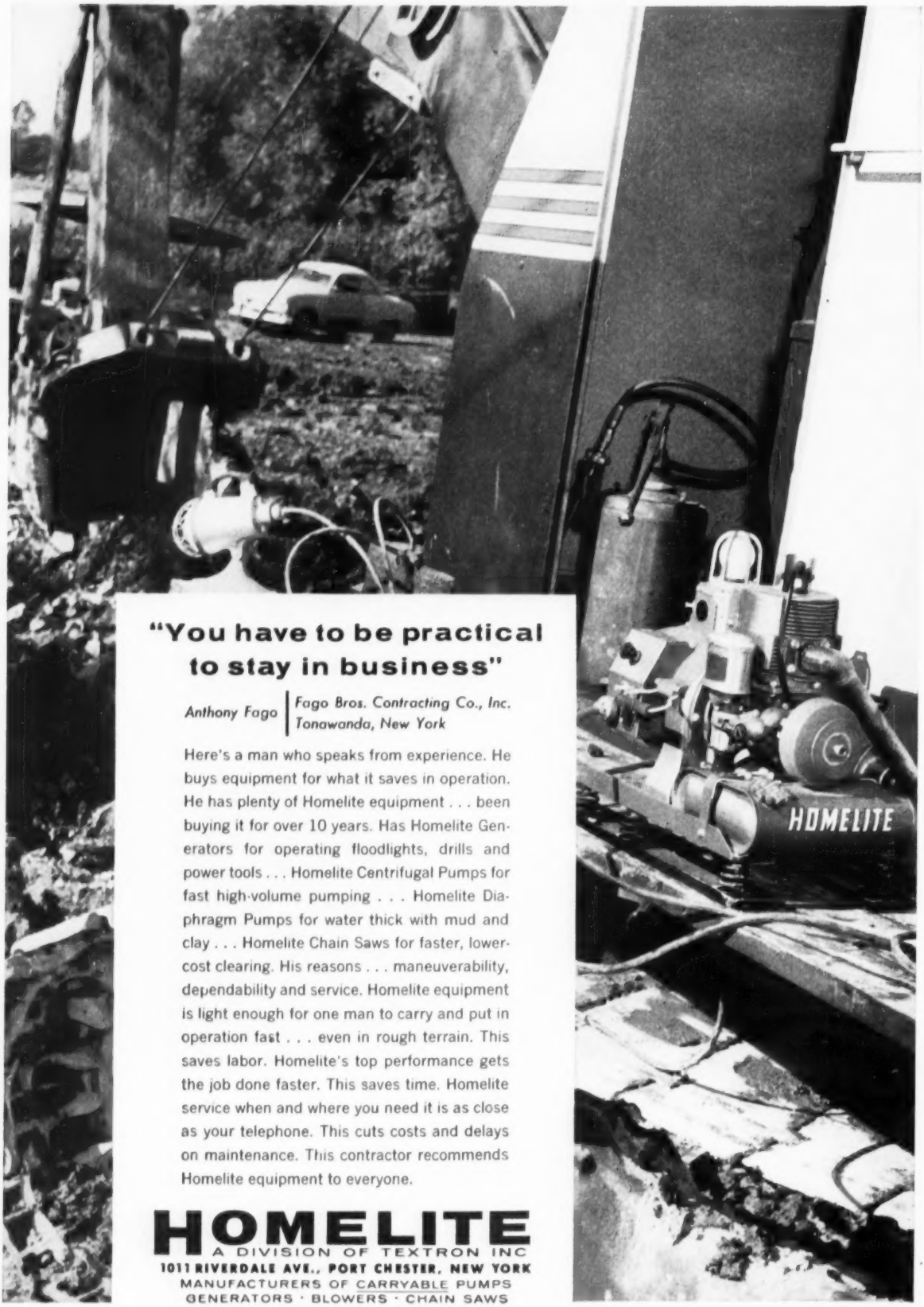
AMOCO* Lithium Multi-Purpose Grease. An all-purpose grease used wherever chassis, wheel-bearing or ball-bearing greases are specified. Resistant to heat and water.

STANDARD

STANDARD OIL COMPANY
(Indiana)

*Trade Mark AMOCO registered U. S. Patent Office by The American Oil Company and used by Standard Oil Company under license.

FOR MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES



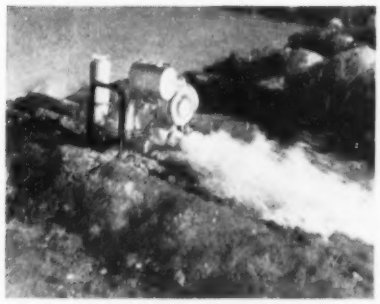
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Anthony Fago | *Fago Bros. Contracting Co., Inc.*
Tonawanda, New York

Here's a man who speaks from experience. He buys equipment for what it saves in operation. He has plenty of Homelite equipment . . . been buying it for over 10 years. Has Homelite Generators for operating floodlights, drills and power tools . . . Homelite Centrifugal Pumps for fast high-volume pumping . . . Homelite Diaphragm Pumps for water thick with mud and clay . . . Homelite Chain Saws for faster, lower-cost clearing. His reasons . . . maneuverability, dependability and service. Homelite equipment is light enough for one man to carry and put in operation fast . . . even in rough terrain. This saves labor. Homelite's top performance gets the job done faster. This saves time. Homelite service when and where you need it is as close as your telephone. This cuts costs and delays on maintenance. This contractor recommends Homelite equipment to everyone.

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MANUFACTURERS OF CARRYABLE PUMPS
GENERATORS · BLOWERS · CHAIN SAWS

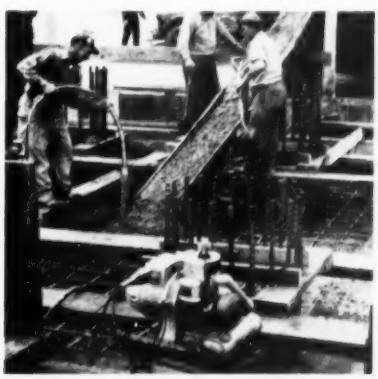
Full Line of Carryable Construction Equipment Now Offered by Homelite



Carryable Diaphragm Pump . . . This self-priming, 120 pound diaphragm pump will handle water in the thickest sand, muck, or mud. Capacity: 5,000 g.p.h. Size: 3". Complete line of centrifugal pumps are also available in sizes from 1½" to 3".



Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.



One-Man Electric Vibrator . . . It takes only one man to place concrete with powerful, Homelite high-cycle or universal electric concrete vibrators. Carryable Homelite generator provides power for high-cycle vibrators *and* 110 volt DC for all universal vibrators, tools and floodlights.

HOMELITE

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PORT CHESTER, NEW YORK

CONSTRUCTION BUSINESS . . . continued

States facing the prospect of falling well behind in their part of the program are expected to step up their lettings late this year so construction can start early next year.

The large volume of work out for bids or in the planning stage indicates a continuing rise in interstate awards. The Bureau of Public Roads reports that as of August 31 projects estimated to cost $480,000 million were out for bids, compared to total lettings of $664 million in the first eight months. In addition, other projects valued at $1,574 million were in the planning stage at that time —$735.3 milion programed with funds committed, plus $834.4 million still further along with funds committed or already spent for preliminary engineering or right-of-way acquisition.

"ABC" and Toll Road Awards Increase

Though most of the increase in state highway awards this year reflects the interstate program, contracts also are running higher for "ABC" work (primary, secondary, and urban highways) and for toll roads.

Eight-months totals are up $972 million or 6% over 1956 for "ABC" projects, and $307 million or 7% for toll projects. While the toll road boom faded long ago, toll road and bridge contracts this year are adding to contractors' new business in half a dozen states. Illinois leads with $250 million in awards for the first eight months, followed by New York with $33 million and Virginia with $23 million. Small contracts have been let by California, New Jersey, and Texas.

By contrast, contracts are running 10% behind 1956 for state highways other than federally aided and toll projects. Awards for these roads total $410 million.

Sewerage Construction Will Hit New Peak

Contractors can look to the sewerage construction market for a fat increase in new business during the next three years. More than 3,100 sewage treatment plants and interceptor sewer projects are planned by 40 states and the District of Columbia for



MAKE BULLDOZERS DOUBLY EFFECTIVE



. . . . with **PRECO** *Back-Rippers*

These Preco Back-Rippers, mounted on the reverse side of the bulldozer moldboard, dig in and rip **while the tractor backs up.** They make blading easier and faster because they rip out rocks, roots and hard ground, enabling the tractor to work a full blade with less horsepower on its next trip. This is **double-duty bulldozing.**

Like contractors all over America, you can save time and money by using Preco Back-Rippers in building pioneer roads, clearing land and rights-of-way, in gravel pit operations, slate breaking in coal strip mines, for logging operations and mounted on pusher tractors for faster scraper loading.

See your Caterpillar Dealer or send the coupon for information.

BACK UP RIPPING **EASIER FORWARD DOZING**

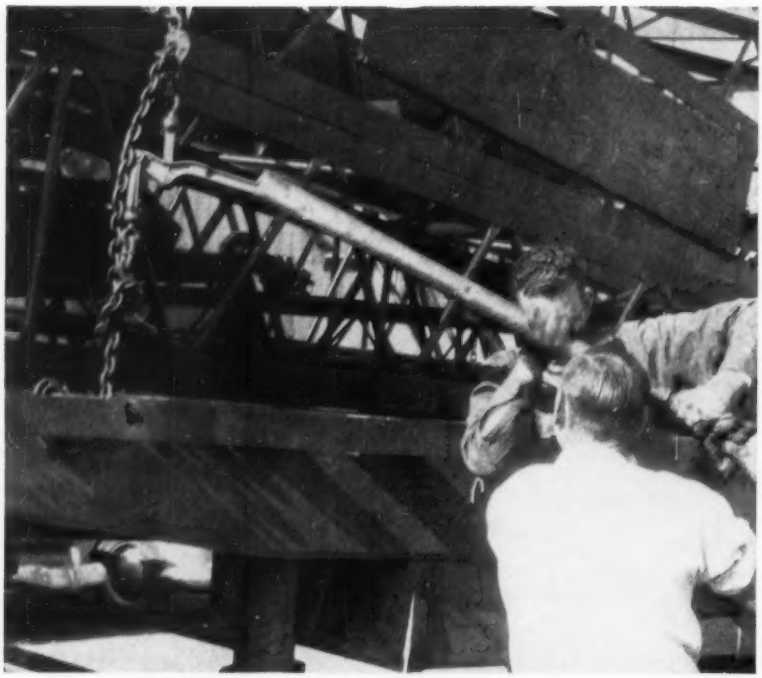


Preco Back-Rippers are completely automatic in operation — they dig in on the back-up trip and ride on the surface when going forward. There are no controls and, when desired, they can be locked up out of the way.

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THIS LOAD WILL STAY PUT . . . ACROSS TOWN — ACROSS COUNTRY

There's no doubt about the safety of this load—or any load secured with Lebus Loadbinders. Completely drop forged, then heat treated for even more strength and durability, the millions of Lebus Loadbinders already in use have proved their ability to tie down loads of every description—keep them absolutely secured without failure *until they're released!*

You get an idea of this loadbinder's strength from the photo above. Two big truckers throw their combined weight on a long cheater without fear of breaking or bending any part—they know that, from handle to hooks, the Lebus is the strongest Loadbinder manufactured. You're assured of safe, dependable performance because each Loadbinder is thoroughly proof tested before shipment.

Equally important is the Lebus Loadbinder's convenience and safety of operation. Once the binder is locked in position, it can't snap open. Even shifting loads won't spread the handle! Exclusive Lebus designed ball and socket swivel is drop forged—won't pull apart regardless of the load! Get complete details on the number one loadbinder in every industry from Crosby Laughlin Lebus Distributors!

WORKERS PROTECTED

Workers and materials are protected with Crosby-Laughlin Safety Hooks that keep the load in place *until it's released!* A rust-proof, non-jamming latch and spring provides a simple but safe method of keeping rings and slings



on the hook, even when the load is set down! Tough Crosby-Laughlin Hooks are drop forged then carefully heat treated. The result is superior strength and quality from a design that eliminates excess weight. Crosby-Laughlin safety and standard hooks are available in eye, hoist, shank and swivel types to give you the exact design you need. Capacities range up to 20 tons! See your nearby distributor for catalogs and technical information on a complete line of fittings!

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CONSTRUCTION BUSINESS . . .
continued

Sewage Treatment Plant Needs 1957-60

Estimates based on Feb. '57 Survey*
(in millions of dollars)

	Fiscal Year 1957-1958	1958-1959	1959-1960
Total, 40 States and D.C.	$466.6	$421.9	$702.6
New England	11.6	13.9	19.1
Maine	n.a.	n.a.	n.a.
New Hampshire	1.3	1.3	1.2
Vermont	0.7	1.7	1.9
Massachusetts	7.0	7.0	6.0
Rhode Island	2.6	3.9	10.0
Connecticut	n.a.	n.a.	n.a.
Middle Atlantic	104.3	110.5	130.9
New York	49.2	46.9	44.2
New Jersey	17.0	11.0	31.0
Pennsylvania	22.0	45.0	49.0
Maryland	11.5	7.6	6.7
Dist. Columbia	4.6	0	0
Deleware	n.a.	n.a.	n.a.
South	77.3	52.0	52.5
Virginia	10.0	10.0	8.7
W. Virginia	n.a.	n.a.	n.a.
No. Carolina	2.7	0.8	0.5
So. Carolina	1.3	2.2	1.5
Georgia	n.a.	n.a.	n.a.
Florida	11.3	9.0	8.0
Alabama	16.4	8.4	6.6
Mississippi	3.4	4.7	4.7
Louisiana	5.8	5.8	11.8
Kentucky	22.0	4.3	7.7
Tennessee	4.4	6.8	3.0
Middle West	89.7	82.7	55.0
Ohio	52.4	45.5	28.2
Indiana	12.7	21.6	18.2
Illinois	n.a.	n.a.	n.a.
Wisconsin	10.5	0.9	5.6
Michigan	14.1	14.7	3.0
West of Mississippi	156.7	139.3	421.3
Minnesota	12.0	12.0	11.5
Iowa	11.3	10.4	7.1
Missouri	7.5	9.0	54.0
Arkansas	8.0	5.4	6.6
North Dakota	3.9	3.9	5.3
South Dakota	2.3	1.6	0.8
Nebraska	13.3	7.4	2.9
Kansas	12.3	4.1	24.8
Oklahoma	3.7	4.3	5.5
Texas	74.6	73.2	295.9
Montana	2.0	1.5	2.0
Wyoming	2.2	2.6	0.6
Colorado	n.a.	n.a.	n.a.
New Mexico	3.6	3.9	4.3
Far West	27.0	23.5	23.8
Idaho	2.0	3.6	4.5
Utah	11.1	4.3	2.2
Arizona	5.3	5.1	5.0
Nevada	1.5	2.4	7.6
Washington	4.4	5.9	2.6
Oregon	2.7	2.2	1.9
California	n.a.	n.a.	n.a.

*Based on survey of state sanitary engineers by B. A. Poole, Curtiss M. Everts, and David B. Lee, State Sanitary Engineers of Indiana, Oregon and Florida, respectively.

continued on page 57



Working on the distribution system for the Trans-Canada natural gas pipeline, this new Barber-Greene Model 774 Ditcher cuts through clay frozen to a depth of five feet at temperatures around 26° below zero.

New ditcher wheels through frozen clay at 26° below zero

Working every day for two sub-zero months, this new Barber-Greene Model 774 wheel-type ditcher was subjected to operating conditions far beyond any likely to be encountered in normal use. It cut through clay frozen to a depth of five feet in temperatures as low as 26° below zero. Only four days during the entire period did the mercury rise above zero.

Operated by G. M. Gest Construction Ltd., Montreal, the new ditcher was put through this grueling test in Manitoba on a vital phase of the Trans-Canada natural gas pipeline distribution system.

Digging 22 inches wide and four feet deep, the Model 774 averaged over three feet per minute in these extreme conditions.

This ditcher is completely new:

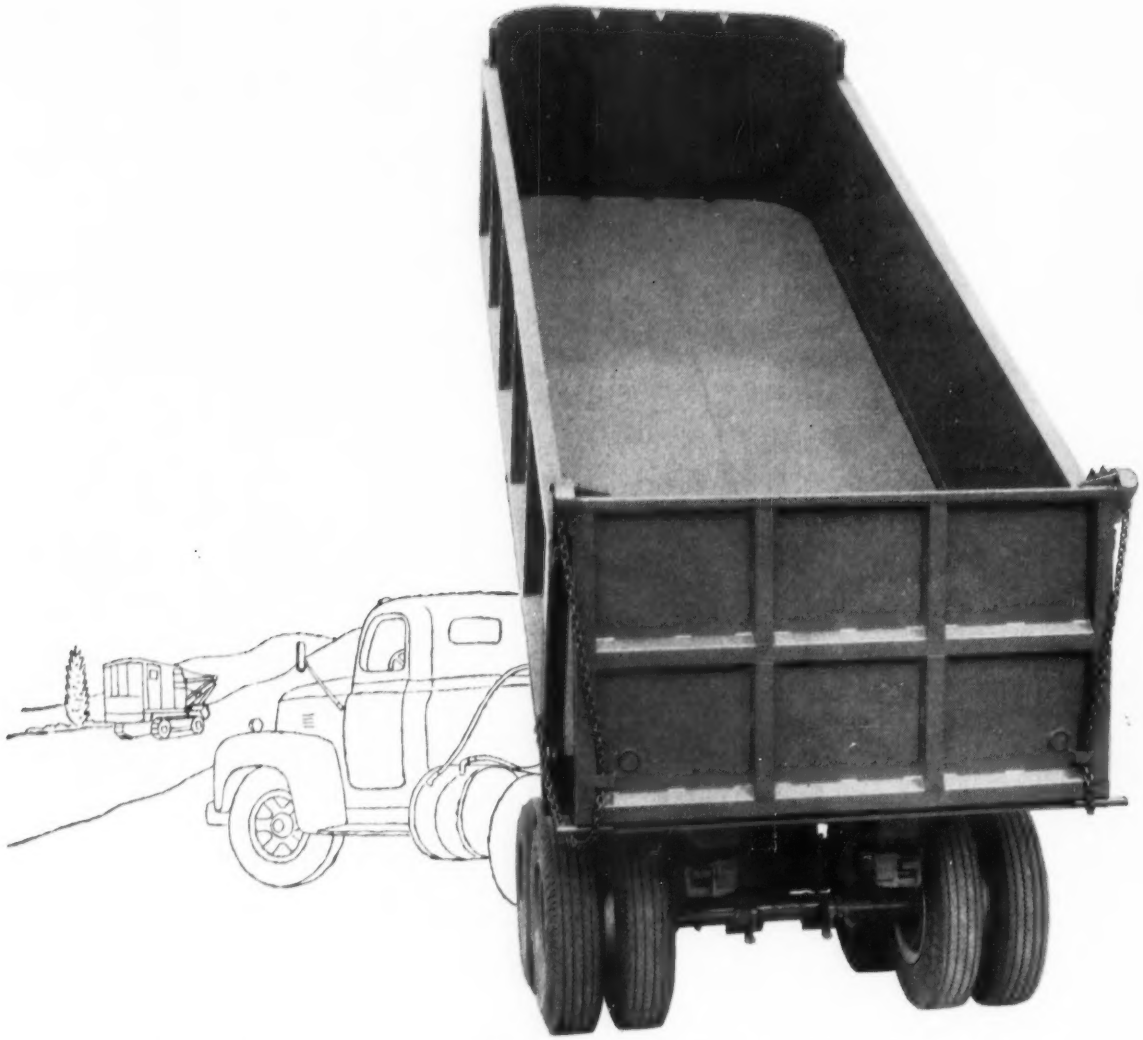
- New digging-wheel drive through telescoping shaft, floating differential, and split No. 1 shaft
- New flexible connection between chassis and boom
- New dual-range Hydra-Crowd for fastest crowding in every digging condition
- New electric overload protection
- New all-hydraulic spoil conveyor
- New hydraulic controls for easier, more accurate operation

Write for literature on the most up-to-date ditcher made. 57-9-D

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Front-Mount Telescopic | Twin Underbody Telescopic | Single Underbody Piston | Twin Underbody Piston | Frameless Telescopic

No single type of hoist can effectively meet the diverse requirements of construction work today. That's why Trailmobile provides the full range of hoist arrangements shown above and many other design variations—so that your particular dump trailer needs can be fulfilled without undesirable compromises.

Your Trailmobile representative will show you how you can "custom design" your next dump trailer for maximum efficiency under your conditions. Call him—you'll find he is an extremely helpful "consultant".

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City_____ State_____

construction between now and 1960. These projects will cost $1,591 million—more than double the value of treatment plant and interceptor sewer construction reported by the U.S. Public Health Service for the three years 1954 to 1956.

These plans, which indicate a very big increase in future contract awards, are revealed in a survey of 48 states by B. A. Poole, Curtiss M. Everts, and David B. Lee, state sanitary engineers of Indiana, Oregon, and Florida. They estimated the national total for all 48 states will be a thumping $1,766 million. Of this, $550 million is estimated for the fiscal year 1957-1958, $470 million for 1958-59 and $746 million for 1959-60. These figures include only treatment plants and interceptor sewers; not included are laterals and branch lines.

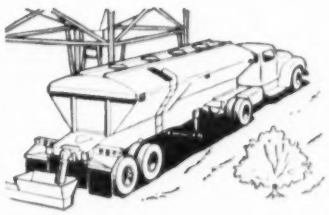
The $550 million in sewerage construction estimated for 1957-58 is more than 80% greater than 1956 construction of these two types of sewage work reported by the Public Health Office. Moreover, the 1959-60 estimated total is about two and one-half times the 1956 total. So it's easy to see the effect on contractors' new business if these plans move along to contract on schedule.

The current federal-aid program will provide only a fraction of the cost of these planned projects. In fact, the survey shows that as presently authorized, the $50 million per year in federal aid is sufficient to cover only half of what would be needed if all projects now planned were to be approved for aid. Furthermore, some states could use four times the amount of federal funds currently authorized.

To make a federal program of aid really effective, the three state sanitary engineers who made the survey suggest that either a federal loan program be substituted for grants in aid or the present federal authorization be amended to increase the amount of aid available and the money be channeled to states when they are ready to use it.

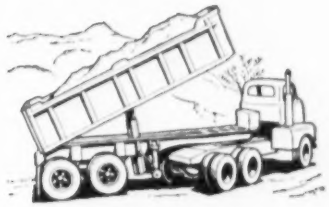
Plans reported in this survey show that the West of the Mississippi region will be the top regional market for treatment plant and interceptor sewer contracts

There's a Trailmobile trailer for every construction need



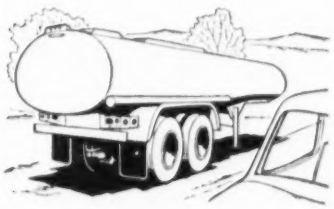
TRAILMOBILE CEMENT BULKERS

. . . transport large amounts of bulk cement to mixing plants at the job site. Both steel and aluminum types offer exclusive step-down design with twin screw discharge.



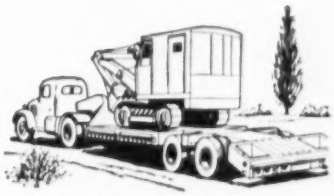
TRAILMOBILE HYDRAULIC DUMPS

. . . provide big capacity in a dump-type trailer for hauling and unloading sand and gravel. Unusually rugged construction guards against costly out-of-service time.



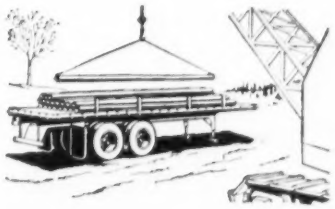
TRAILMOBILE TANK TRAILERS

. . . are widely used for hauling hot asphalt, road oils, and the great volume of water required at the site. Most units carry a unique guarantee against tank leakage.



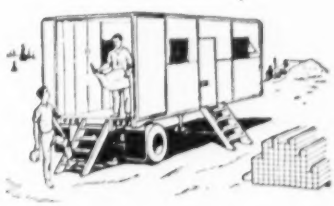
TRAILMOBILE LOW BEDS

. . . are used to deliver heavy road building equipment to the job area. Steel shovels, bull dozers and other large tractor-treaded units can be easily transported on these powerfully built trailers.



TRAILMOBILE PLATFORM TRAILERS

. . . are used for carrying lumber, cement forms, drainage tile, straw bales and sundry light equipment. "Sideless feature" permits simpler, faster loading and unloading.



TRAILMOBILE FREIGHT VANS

. . . combine weather protection and mobility for hauling general supplies. Low cost used vans provide ideal job site offices, tool shops or storage facilities.

TRAILMOBILE INC.

Cincinnati 9, Ohio, Berkeley 10, Calif., Springfield, Mo., Longview, Texas
Sales and Service from Coast to Coast

CONSTRUCTION BUSINESS . . .
continued

(see table page 54). This region accounts for more than one-third of the 1957-58 total. Texas, the top state in the nation, contributes more than half of this region's total.

SOME BIG CONTRACT AWARDS OF THE MONTH

Rocky Reach Dam Builders (Arundel Corp., Pier 2, Baltimore, Md., L. E. Dixon Co., 18404 Sherman Way, Reseda, Calif., **The Hunkin-Conkey Construction Co.**, 1740 E. 12th St., Cleveland, Ohio, **American Pipe & Construction Co.**, 4635 Firestone St., South Gate, Calif. and **Guy F. Atkinson Co.**, 10 West Orange St., South San Francisco, Calif.) Wenatchee Wash. Completing Rocky Reach Dam, Columbia River, Washington. Chelan Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee, Wash. $52,413,078.

United Eng. & Foundry Co., 948 Fort Duquesne Blvd., Pittsburgh, Pa. A 500,000-sq ft slabbing mill, East Chicago, Ill. for Inland Steel Co., 38 S. Dearborn St., Chicago, Ill. $50,000,000.

Kaiser Eng. Co., Div. of H. J. Kaiser & Co., 1924 Broadway, Oakland, Calif. Design and construct plant for manufacturing Portland and mortar cement, Foremen, Ark. Arkansas Cement Corp., subsidiary Arkansas-Louisiana Gas Co., 300 W. Capital St., Little Rock, Ark. $15,000,000.

Edwin Moss & Sons, Inc., 555 Grant St., Bridgeport, Conn. 9-story office, Oak St. Redevelopment Project, New Haven, Conn. for Southern New England Telephone Co., 227 Church St., New Haven, Conn. $11,305,480.

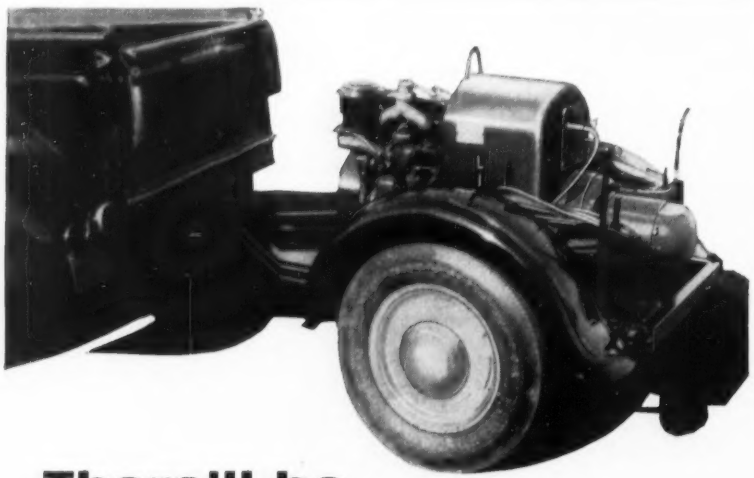
Bryant & Detwiler Co., 2110 Penobscot Bldg., Detroit, Mich. 14-story main office bldg., will cover the block within Woodward, Griswold, Fort and Congress Sts., Detroit, Mich. for the National Bank of Detroit, 660 Woodward Ave., Detroit, Mich. $10,000,000.

Somers Bros. Constr. Co., U.S. Hy. 1, Iselin, N.J. Erecting refinery for fuel oil on Arthur Kill, Woodbridge, N.J. for Hess Trading & Transport, Inc., State St., Perth Amboy, N.J. $8,000,000.

Walter Kidde Constructors, Inc., 140 Cedar St., New York, N.Y. New Andrus Pavillion at St. John's Riverside Hospital, Yonkers, N.Y. for St. John's Riverside Hospital, Asburton Ave., Yonkers, N.Y. $8,000,000.

Howard S. Wright Const. Co., 414 Pontius St., Seattle, Wash., **S. Birch & Sons Constr. Co.**, Ford Bldg., Great Falls, Mont. and **D. L. Cheney**, Seattle, Wash. (Joint venture) construct flight engine test facility at National Reactor Testing Station, Arco, Idaho for the Atomic Energy Comm., Idaho Operations Office, P.O. Box 1221, Idaho Falls, Idaho. $6,044,695.

Caldwell-Wingate Co., 101 Park Ave., New York 17, N.Y. Third section of Jefferson Houses, New York, N.Y. for New York City Housing Authority, 299 Broadway, New York 7, N.Y. $5,600,000.

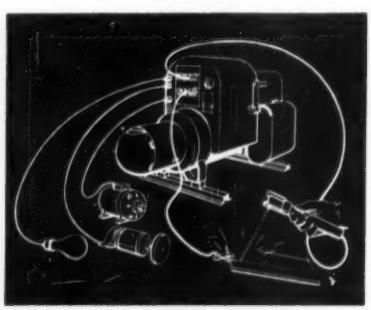


There'll be no lost time on this job

This contractor takes his own power with him. Whether he needs electricity for lights, power tools, pumps, or to weld a broken piece of equipment, Weldanpower will furnish the electric power he needs—when he needs it.

WELDANPOWER

Gasoline engine-driven 5000 watt, 115/230 volt power generator and 200 amp. welder combined. Powers lights, tools, motors, heaters and other electrical equipment and welds, simultaneously if necessary! Write for Bulletin SB-1339 for full details.



LINCOLN

THE LINCOLN ELECTRIC COMPANY
Dept. 2718 • Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment



Dozing—But Never Dozing Off. Moving earth for new Interchange north of Washington, dozers average 3000-4000 hrs. before overhaul using Cities Service C-300 Motor Oil!

Greene in Name Only. Veteran construction man Ralph Greene is one of Washington's largest earth movers. He refuses to baby his trucks. With Cities Service lubricants they can take it!





At work on new Interchange: Greene & Dyer, Inc., Washington, D. C.

Trucks go 7000 hrs. without overhaul— Shovel chalks up 8500 hrs.

Big earth mover strikes paydirt with Cities Service Products

In the past year, Greene & Dyer, Inc. has moved 1½ million yards of earth in building an Interchange for the new road system north of Washington, D. C.

To do it, President Ralph Greene has kept his trucks, dozers and shovels running constantly under grueling mud and dust conditions. For, as he says: "We're in business to move dirt, not to baby trucks."

Nevertheless, Greene's equipment is rolling up one record after another, using Cities Service C-300 Motor Oil and Cities Service fuels and greases.

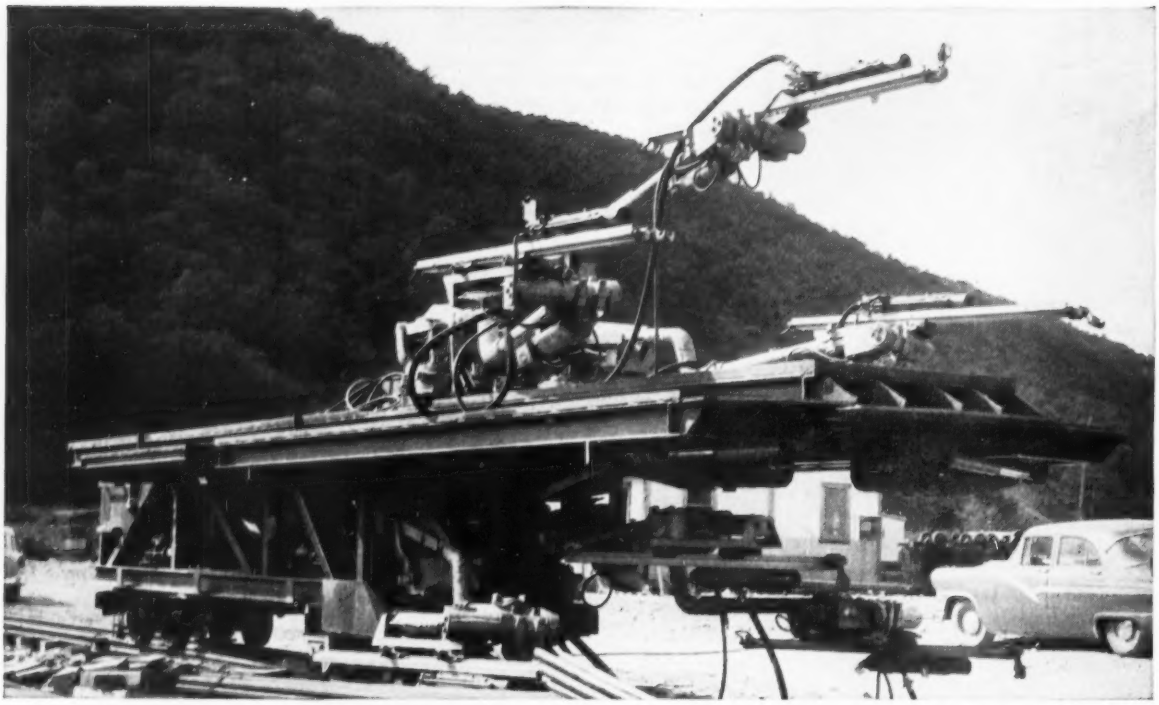
Dozers are getting 3000-4000 hours before overhaul. Trucks are rolling up 65,000 miles—or about 7000 hours each. And one shovel has gone 8500 hours with no overhaul yet needed.

Says Greene: "That's proof enough for me that Cities Service products are the best I can use. I'd recommend Cities Service to anyone whose work demands fuels and lubricants that can take it."

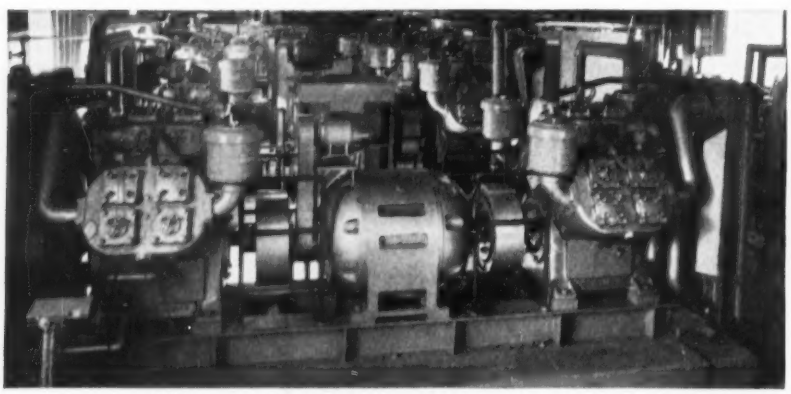
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

(Advertisement)



By April of this year, the contractors were using 30 Gardner-Denver hydraulic booms and drill positioners . . . 40 Gardner-Denver tunnel drills. Here's one of the six-boom, rail-mounted jumbos used to cut a 53-hole pattern for each round.



Thirty-one Gardner-Denver WBJ two-stage, water-cooled compressors—mounted in pairs with one motor for each pair—supply compressed air power. These four dual units are at one of the shaft headings.



More air power for the drilling operation comes from five Gardner-Denver rotary portables. These three are at the inlet adit.



Roof bolting goes faster, easier, with 24 Gardner-Denver roof bolting stopers on hand to drill the holes and tighten the bolts.

EQUIPMENT REPORT

on the 44-Mile

WEST DELAWARE TUNNEL

Job: West Delaware Tunnel of the New York City Board of Water Supply—being driven from Cannonsville to Lowes Corners.

Rough Bore: 14′. Workings: seven shafts—inlet and outlet adits.

Contractors: Drake-Grafe-Winston-Tecon-Conduit—Contracts #451-452.
West Delaware Tunnel Constructors—Contracts #454-455.

GARDNER-DENVER EQUIPMENT ON THE JOB:

40 CF93N 3½″ bore drifter drills mounted on aluminum guide shell for 6′ steel change.

30 JA or JB Hydraulic booms with power swing and equipped with:

30 DPU Universal hydraulic drill positioner.

5 JA Hydraulic fan line booms.

10 JMA Hydraulic power pumps.

2 DH123 4½″ bore drifters on SF aluminum feed for 6′ steel change.

3 DH143 5½″ bore drifters on RM chain feed for 6′ steel change.

2 DH143 5½″ bore drifters on RM chain feed for 12′ steel change (shaft work).

24 RB94SSP Roof bolt stopers with stop rotation and 36″ telescopic leg.

14 FL58N Feed leg drills with 4′ leg.

30 S58N Sinker drills.

12 VP4 Pneumatic sump pumps.

4 B37 35-lb. class breakers.

10 B87B 80-lb. class breakers.

2 HB Air hoists—1250-lb. lift.

12 HK Air hoists—2000-lb. lift.

3 T-23 Backfill tampers.

2 MEA Air motors for grout mixer.

4 FC-FS Size 10″ x 3″ x 10″ grout pumps.

1 81 Gardner-Denver Keller air grinder.

31 WBJ Stationary air compressors.

5 RP600D Rotary portable air compressors.



ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

MAKE MONEY ON WET JOBS



Red River Pipeline Crossing — Texas

Dig Them In The Dry With A Moretrench Wellpoint System

For interesting data on this modern method of handling wet excavation profitably, send for our illustrated catalog.

MORETRENCH CORPORATION

World's Oldest, Largest and Most Experienced Predrainage Organization

90 West St, New York 6 | 4900 S. Austin Ave., Chicago 38, Illinois | 7701 Interbay Blvd., Tampa 9, Florida | 315 W. 25th St., Houston 8, Texas | Rockaway, New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo W CROTHERS Limited, Toronto, Ontario

Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

(Advertisement)

"I tune up my GMC Diesels twice a year —then forget them" *—says Paul Wagner, Jr., of Lexington Sand & Gravel, South Acton, Mass., in reporting on his giant dumps*

PAUL WAGNER doesn't believe in pampering trucks. His have to haul at least five 40-mile round trips a day. And they have to do that *every* day.

King-size Loads

Lexington's trucks haul *real* payloads, too. The GMC DW974 in the picture totes 19 tons. His GMC D662 semitrailer dump handles 20. And even when a job takes them over the best roads around, they still have the stop-and-go penalties of heavy daytime traffic.

5 Miles a Gallon

Despite their heavy-hauling assignments, Wagner's GMC Diesels are averaging better than 5 mpg. That's 50% better than gasoline trucks doing the same job, he reports.

No Overhauls in 125,000 Miles

Most important of all, these GMC's seem to require amazingly little servicing. One Diesel has already clocked 125,000 miles. It's never been overhauled—there's no need in sight. Yet Wagner's other-make trucks had to be rebuilt at 100,000 miles.

Next Truck a GMC, Too

"Since my first GMC in '54, I haven't bought anything else," Wagner says. "If I needed another truck right now, I think it would be another GMC. They give me just what I want in a truck. And I've never seen another firm so ready to stand behind their product after you've bought one."

GMC TRUCK & COACH
A General Motors Division

GENERAL MOTORS
GOLDEN MILESTONE



SPEC SHEET ON THE GMC DW970 — NOW WITH TURBOPOWER DIESEL

Capacity—59,000 GVW-90,000 GCW

Power—236 h.p. delivered by new 6-cylinder, 2-cycle Turbopower Diesel

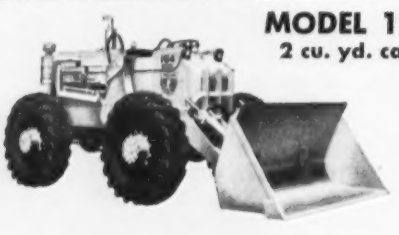
Transmission—Five-speed Synchro-Mesh with overdrive and 4-speed auxiliary

Axles—11,000-lb. front and 48,000-lb. dual rear

EVEN WITH A 19-TON LOAD ON ITS BACK, this GMC DW974 Diesel takes on tough pulls like this without sweat or strain. Its big, *2-cycle* Diesel delivers top torque—all the load-moving power it takes to handle the most punishing hauling conditions on or off the highway.

HOW TROJAN FROM A YALE

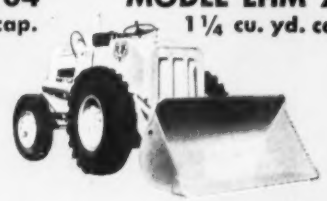




MODEL 154
2 cu. yd. cap.

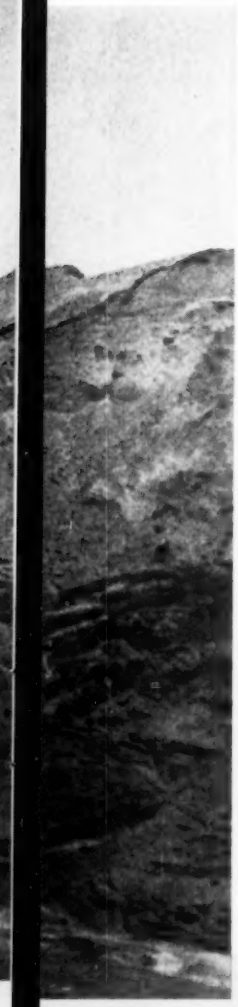


MODEL 104
1½ cu. yd. cap.



MODEL LHM 75
1¼ cu. yd. cap.

OWNERS BENEFIT & TOWNE TRADITION!



With the famous YALE trade-mark appearing on the new line of TROJAN tractor shovels, owners are finding that Yale & Towne's 90 year tradition of only the best in engineering, materials and manufacturing can pay-off in operating benefits . . . Today, every TROJAN, regardless of size, is designed and built to *dig*, *carry* and *load* better than any comparable machine on the market — and here's how they do it . . .

TROJAN'S straight line horizontal thrust utilizes the total weight and power of the machine for maximum *digging* efficiency; the low load *carrying* position permits fast, stable and safe travel; the high-lift reverse curve safety arms carry material to maximum *loading* height with exceptional speed and complete personal safety for the operator . . . Compare — you'll find that only TROJAN has *all* the operating features checked below — features that mean extra dollars in profits to you!

Because TROJAN distributors sincerely believe that a new TROJAN will outperform any comparable machine, they will gladly arrange a demonstration *any place, any time* — you make the comparison!

REVERSE CURVE SAFETY ARMS . . .
for full 360° vision at all times with absolute personal safety for operator.

ALLISON TORQMATIC TRANSMISSION . . .
for fast, easy shifting-*forward or reverse*-at full power without foot clutch.

STRAIGHT LINE HORIZONTAL THRUST . . .
allows constant crowding of pile while maintaining full traction and steerage.

INDEPENDENT BUCKET ACTION . . .
lets you fill buckets to heaping every time–even from windrows or low piles.

LOW LOAD CARRYING POSITION . . .
gives greater stability—allows faster, safer travel with far less spillage.

FASTER TIME CYCLE . . .
is the natural result of these features. Faster work means greater job profits!

TROJAN YALE & TOWNE

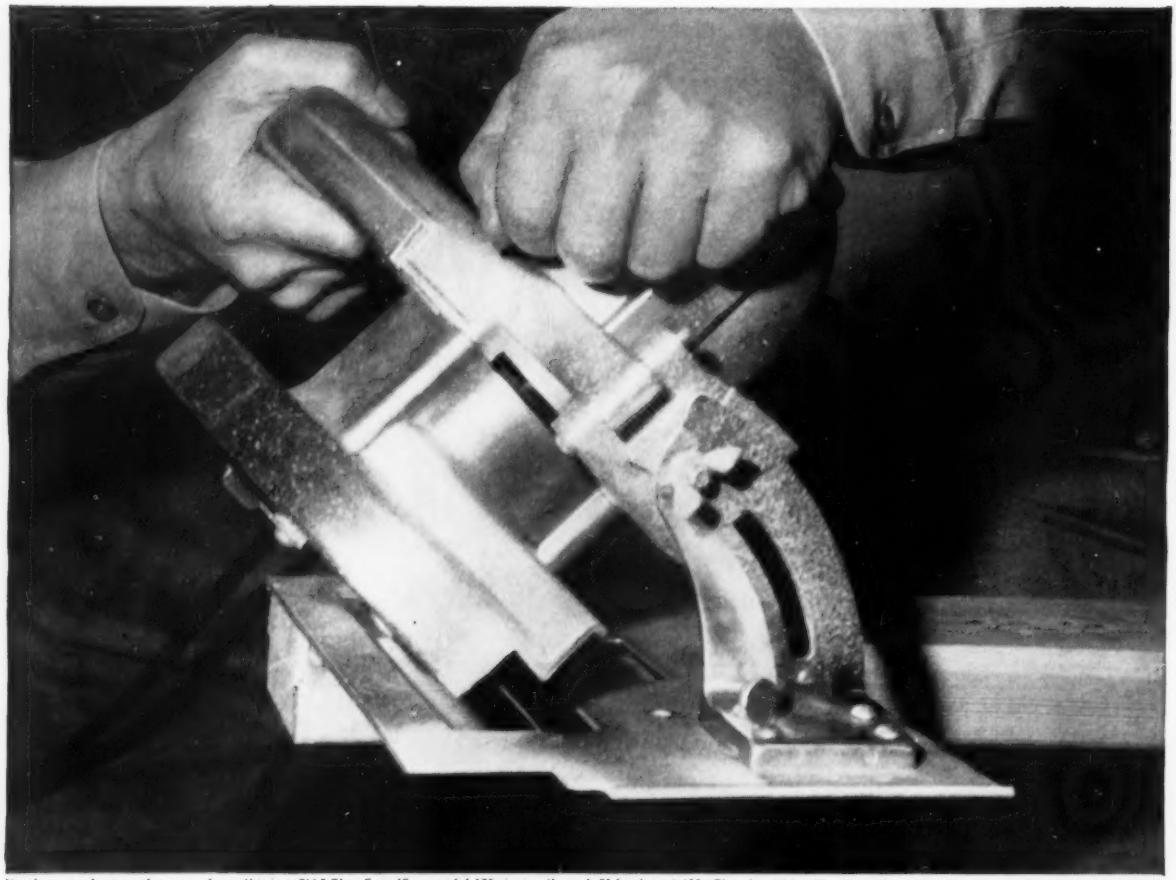
TROJAN* *REG. U. S. PAT. OFF.

YALE & TOWNE

TRACTOR SHOVELS

2 & 4 Wheel Drive Front-End Loaders

CONTRACTORS MACHINERY DIV., THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA



Here's an angle on a sharp saw buy—this is a 7¼" Thor SpeedSaw model 475 zipping through 2" lumber at 45°. There's nothing like it on the market for anywhere near its $64.95 price.

Cut your lumber and your costs faster!

Choose from 7 powerful Thor saws

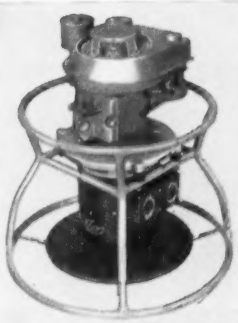
Get Thor electric saws on the job. Save costly labor time—keep the crew happy, power saws are a lot easier on the operator than hand methods. Build up your profits per job—get the crew to the next job quicker.

And look at the selection of tools Thor's got for you. Seven saws ranging from the 6¼" Thor Model 450 SpeedSaw (Just $49.95, cuts 2 x 4 at 45°) to the brawny Thor Silver Line T-12 with a 12" blade, capable of a 4⅞" cut. Other Thor saws include the popular Thor Model 475 7¼" SpeedSaw with a 1.75 h.p. motor at $64.95, 6¼" Silver Line model T6, 7¼" Model T7, 8¼" model T8 and 10" Model T10.

All Thor SpeedSaws and Silver Line saws are available with combination blade, 10 ft. of 3-conductor cable, nut wrench, lubricant and steel carrying case. 9 blade types and a variety of abrasive discs are offered as accessories.

Thousands of Thor saws are on building sites right now saving time and money. Why don't you ask your Thor distributor to demonstrate any Thor saw right on your site? Thor Power Tool Co., Prudential Plaza, Chicago 1, Illinois.

Thor
PORTABLE POWER
TOOLS

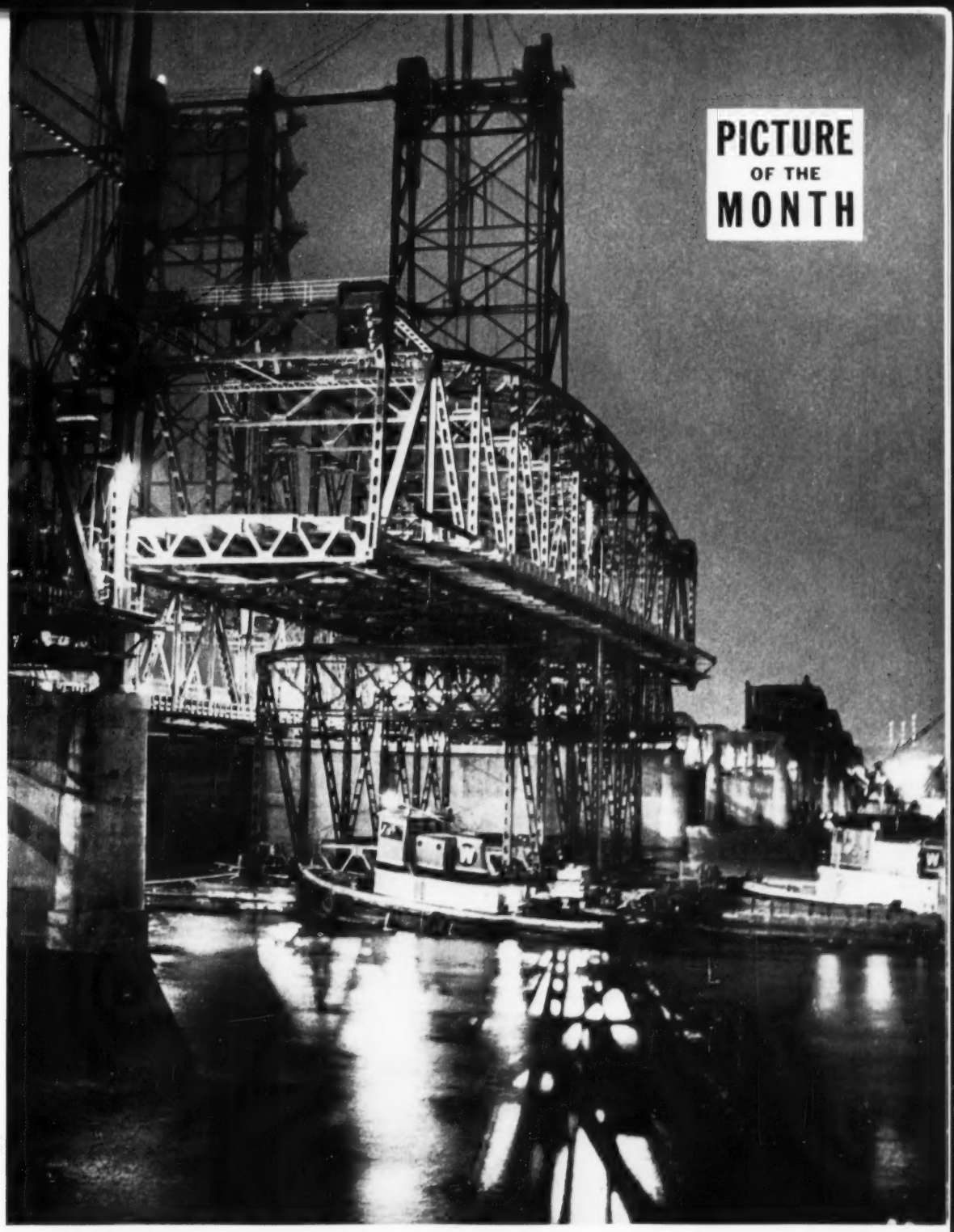


Need power on the job site?

This is Thor's new portable 1500-watt generator which can power two saws at one time. Its revolutionary vertically mounted engine assures long productive life. Available in AC or DC models.

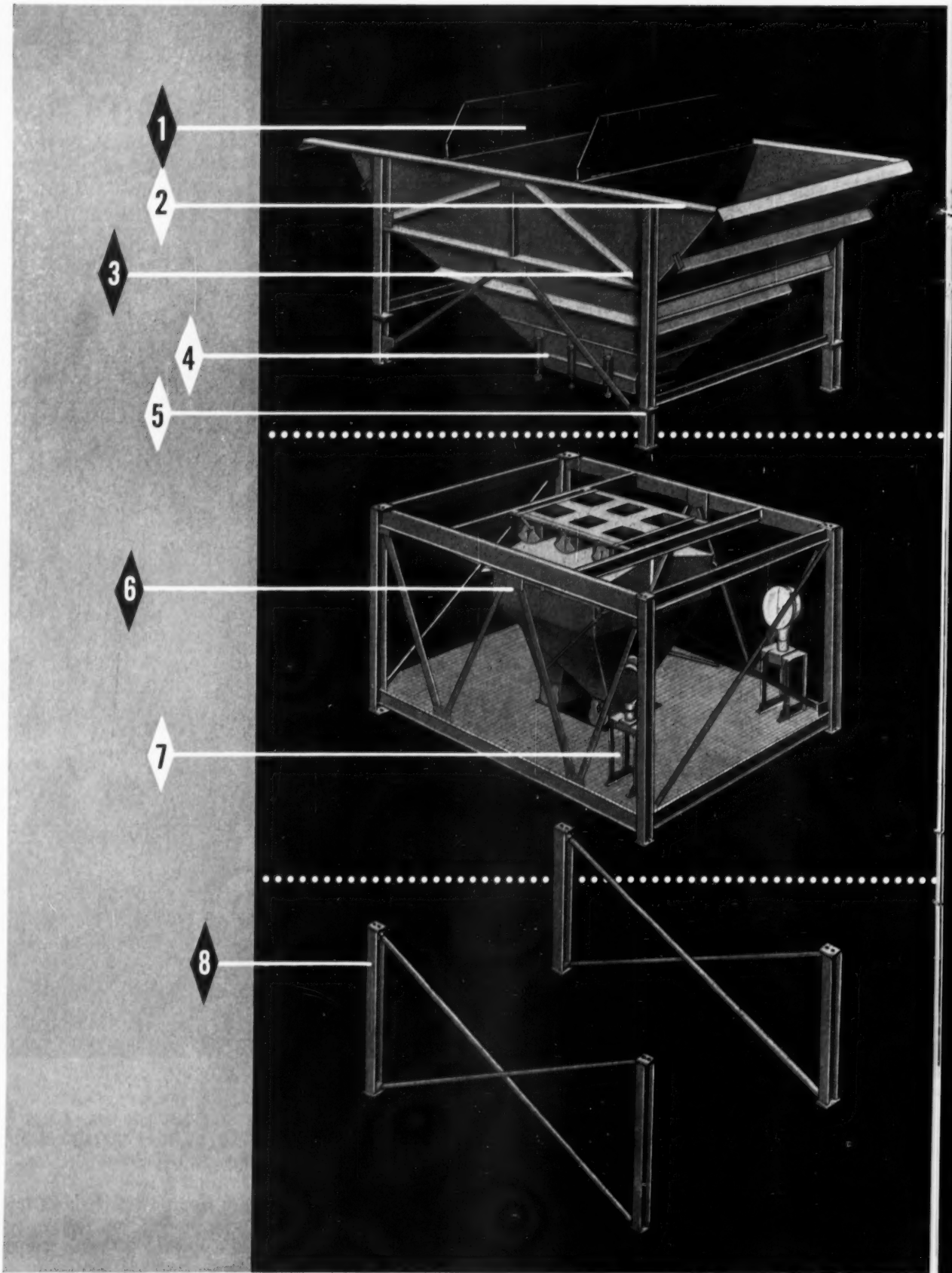
THOR POWER TOOL COMPANY, CHICAGO

Branches in all principal cities



Lift Span Goes In At Night

• Lift span for the new Interstate Bridge between Portland, Ore., and Vancouver, Wash., floats into position at 4:30 am. Judson-Pacific-Murphy Corp. chose the early morning hour to take advantage of favorable wind and tide conditions. The span was fabricated on falsework consisting of a half span from another part of the bridge. The 420-ton span and falsework made a 600-ton load for three barges. By 9:30 am the span was in place on temporary supports and barges had removed the falsework so river traffic could pass. Guy F. Atkinson Co. is the general contractor.


1
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8

Here's the portable plant you've been asking for

NEW HELTZEL ENGINEERED, UNITIZED PLANTS COMBINE "MINUTE-MAN" ASSEMBLY AND DISMANTLING WITHOUT SACRIFICING STRENGTH, RIGIDITY OR ACCURACY

HELTZEL, long a leader in quality batching plants, now offers you extreme portability without sacrifice of dependable accuracy or rugged strength.

Heltzel engineers have developed a completely unitized batching plant to meet the requirements suggested by many of the nation's foremost highway and airport contractors. The plant is fast, versatile, and extremely portable. It can be transported with standard highway equipment and assembled quickly with a minimum of labor. It is dismantled just as easily.



This unitized plant is fabricated in three easy-to-handle sections: The hopper section with folding heap plates (1), compartmentation to suit requirements (2), structurally reinforced — all welded construction (3), capacity to 200 tons, air electric controls with instantaneous coupling with manual standby controls (4). Straight manual controls available. Column connectors (5) are extra large for easy spotting and rapid assembly.

The batching or intermediate section comes completely factory assembled with single, dual or twin batchers fully automatic or manual (6) and time proved, ultra high speed Heltzel weighing system (7).

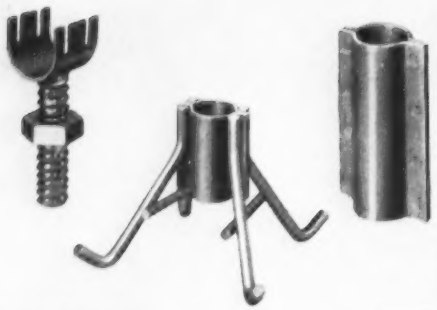
The support section is formed of rugged, yet easy-to-handle wide flange beams (8) with bracing furnished for drive through in either direction.

You'll want to know more about this portable plant that works with all the speed and accuracy of a modern stationary plant. Contact your Heltzel representative or write direct.

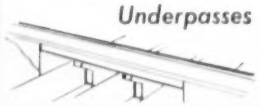
THE HELTZEL STEEL FORM AND IRON COMPANY

450 THOMAS RD., WARREN, OHIO

421



HEAVY-DUTY SCREED SUPPORTS



Overpasses and Underpasses



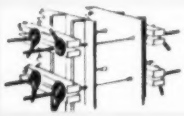
THREADED COIL TIES



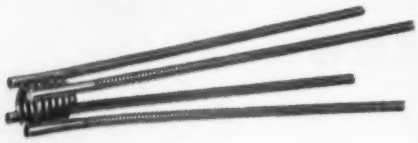
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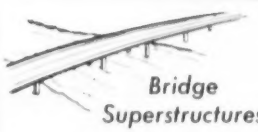
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New York Office
1775 Broadway
New York 19, N. Y.

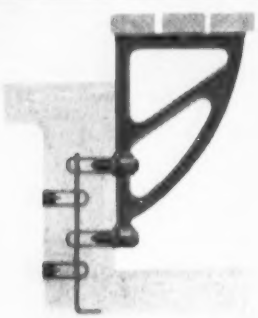
Pacific Coast Plant
2100 Williams St.
San Leandro, Calif.



PLATE HANGER FRAMES



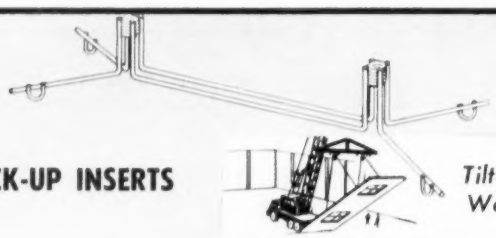
Bridge Superstructures



RISER-FRAMES

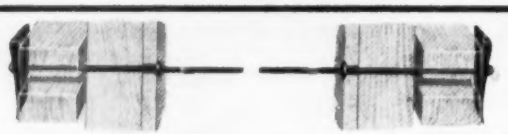


Stadiums and Grandstands

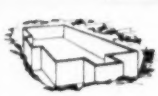


PICK-UP INSERTS

Tilt-Up Work

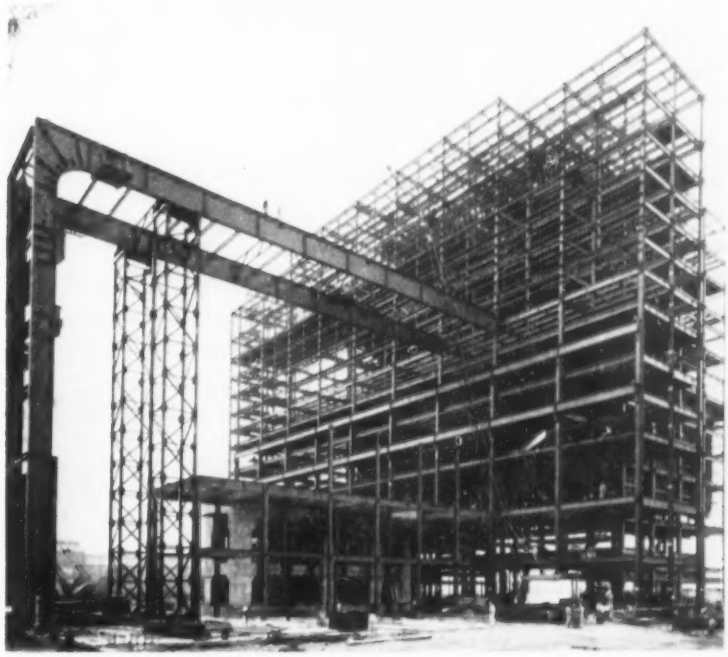


SNAP TIES



Ordinary Foundations

Construction News in Pictures . . .



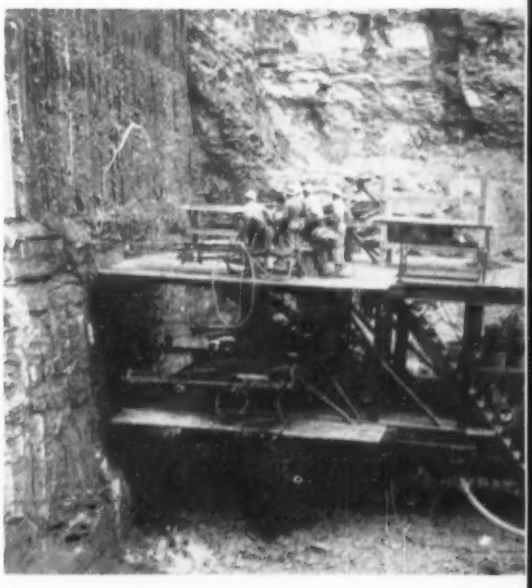
Power Plant Framing

Nine big column-girder assemblies like the two already in place will house what may be the largest turbine generating units in the world at the new Philadelphia Electric Co. power plant near Eddystone, Pa. The assemblies stand 107 ft high and measure 150 ft across. Bethlehem Steel Co. will erect a total of 8,000 tons of steel.



Beginning of a Bridge

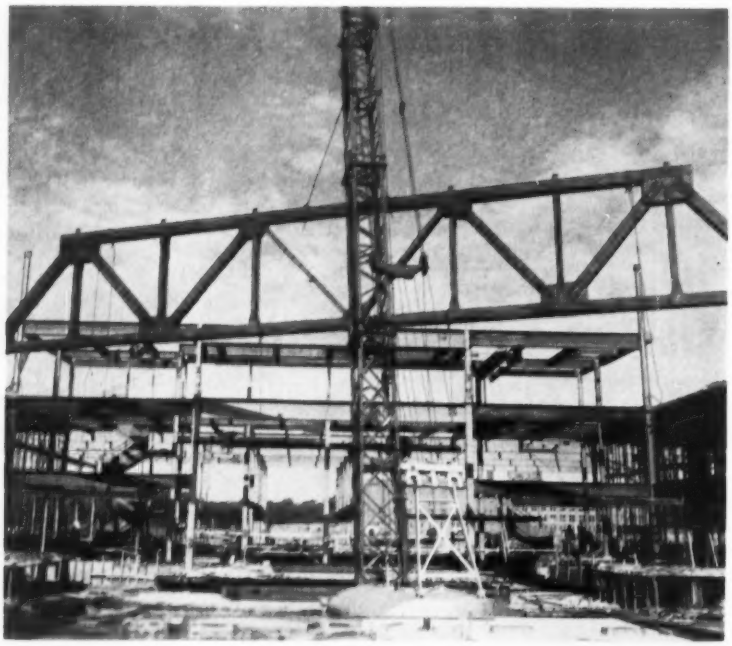
William H. Moore Building Corp. and Lopier Construction Corp. are erecting 11 cofferdams for piers and abutments of a bridge across the Quinnipiac River in New Haven, Conn. They are driving sheet piling supplied by L. B. Foster Co. with two Manitowoc and a Lorain crane equipped with McKiernan-Terry air hammers.



Highway Tunnel

Jumbo begins drilling 3,600 ft underground link between the eastern and western extensions of the Penn-Lincoln Parkway in Pittsburgh. Merritt-Chapman & Scott Corp. mounted 12 Joy drills with Crucible hollow drill steel on a 34-ton Mack truck to bore blast holes for the twin tunnels.

continued on next page



Truss for School

Lima crane with 100-ft boom swings big truss girder into place at new Bronx High School of Science in New York City. Member is 98 ft long, 14 ft deep, and weighs 35 tons. Simon Holland & Son, Inc., of Brooklyn, N.Y., fabricated the truss in their shops and assembled it at the job. Psaty and Fuhrman, Inc., is general contractor.



Pipeline Crossing

It takes Horizontal Holes, Inc., of Houston, Tex., only about 45 min to bore a hole 65 ft long under a highway. With International TD-18's equipped with Superior side-booms supporting Crose boring machines, the firm is drilling 41 such highway crossings for a 20-mi section of the Michigan-Wisconsin natural gas pipeline system.



Tunnel Transport

Tractor shovel shuttles tunnel workers through a 10-ft dia water tunnel 390 ft below the surface. Morrison - Knudsen - Kiewit-Maney, joint venture contractor for the big Boston water supply project, removed the bucket from a Michigan 12B tractor shovel and hooked up a tunnel car to move personnel 3½ mi to the work area.

Fast Switch!

★ **Sets Steel —** 8 to 54 ton sections

★ **Pours Concrete —** 2-yd. bucket

★ **50′ — 140′** boom changes needed



There's a real "quick change artist" geting many jobs done fast on Chicago's Calumet Skyway project. This versatile performer is a Manitowoc Model 3500 60-ton crane operated by Arcole-Midwest Corporation of Skokie, Ill. — Arnold Kincaid, Supt. of Equipment. Equipped with a 50′ boom, the crane sets 8-ton longitudinal and 54-ton support girders for the elevated structure. A quick change to an 80′ boom with a 15′ jib or a 140′ boom, and the rig is ready for high lift concrete pouring with a 2-yd. bucket.

"The Manitowoc 3500 has demonstrated its versatility in multiple use over the long haul," says Arcole-Midwest operator Frank Dauksch. "Its combined advantages of quick interchangeability of lines and booms, plus completely dependable operation make it the ideal single unit for a job with many aspects such as ours. Boom changes of 50′ to 140′ can be made without touching the removable counterweight—there's no downtime resulting from laboriously hauling and adding counterbalance weights. With proper steel schedules, we could easily set up 500 tons per day — enough to complete this job in a week's time."

Boom length changes are simple. Both flanges and pendant lines fit together quickly without tediously re-reeving cable every time. Using only three men, Arcole-Midwest can add another boom segment in just two hours, with a 30% labor cost saving over previous machines used.

For precise steel setting and load spotting, the crane has both manual control — where "feel" of the load is essential — and air control to eliminate operator fatigue. Disc-type clutches assure smooth performance without grabbing and dangerous load swing.

"The mobility of the Model 3500 from job to job is higher than any other machine I have worked with," says Dauksch. "The rig can remove its own track assembly for flat car loading — the only crane to my knowledge that can do this. With our Manitowoc, we can load for shipment without bringing in another crane on the job, saving over $300 in rental cost. On the whole, this Manitowoc is the smoothest working machine made, with many practical refinements that make is *vastly superior* to any other crane we've used."

You can have profit-making versatility like this on *your* next job. Call your helpful Manitowoc distributor now for all the facts!

Manitowoc Engineering Corp., Manitowoc, Wis.

SHOVELS
1 — 5½ YD.

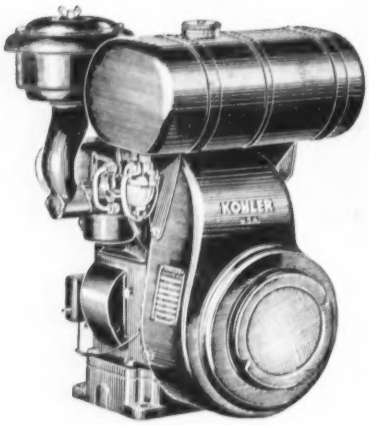
Manitowoc

CRANES
20 — 100 TON

KOHLER ENGINES



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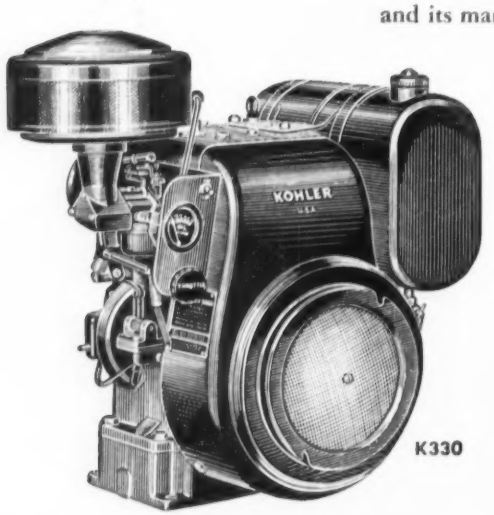
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On-the-job reliability

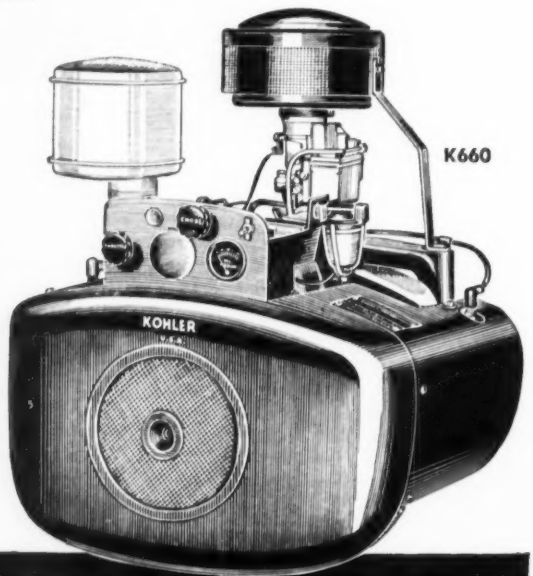
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Construction 'Round the World



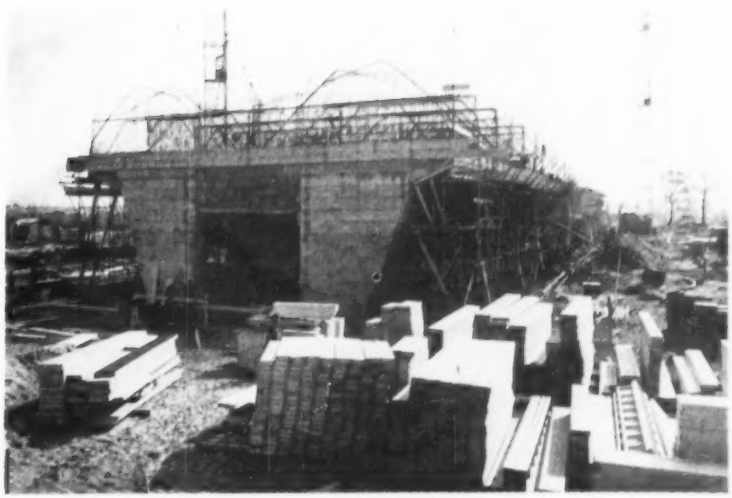
In Greece—

Athenian method for solving present-day parking problems around the Acropolis is off-street parking. Helping solve the problem is an American Eimco tractor-excavator that digs, loads, and levels an Acropolis sidehill area during construction of a parking lot. Traffic problem in area is complicated by heavy tourist trade.



In New Zealand—

Water is lifted 210 ft from the Kawarau River into the main race with a borehole-type pump put into use by the New Zealand Ministry of Works to provide water for the Ripponvale-Cromwell Flats Irrigation scheme. The pump is 63 ft 9 in. long and has five impellers that operate at a rate of 730 rpm.



In Germany—

Apartment house designed by French architect Le Corbusier is one of many projects under way in West Berlin as part of the area's International Building Exhibition. Foundations for this 184-ft-high, 17-story building were begun as part of the show last February. Precast concrete walls will separate apartments.



BACKFILLING AFTER TRENCHING and laying in pipe on a water main project, this American proves its on-the-job versatility. Note the exceptional operator visibility of this 100 Series machine owned by F. W. Forst Co. of Omaha.

CONTRACTOR TRENCHES, LAYS PIPE, BACKFILLS WITH NEW ½-YARD HOE

Digging 1000 feet of water main trench in the Parkview Addition of Fremont, Nebraska, F. W. Forst Co., uses American's new 100 Series Backhoe. This versatile ½-yard hoe is cutting a 6-foot deep, 30-inch wide trench in wet, heavy clay. The contractor is also using his American to lay in the 18-foot long, 475-pound cast iron pipe sections. By installing a backfill plate attachment, the crane completes the job with fast, powerful sweeps that fill the trench quickly. Forst is performing this job for the City of Fremont.

Perfect balance is the key to smooth, efficient crane performance! It's precise balance that keeps Americans flat on their crawler pads when they dig in. Even on full reaches down to 17 feet these hoes won't tilt up on their toes!

With any front—hoe, shovel, dragline, clamshell, magnet or crane boom—American 100 Series offer perfect balance achieved through efficient design and elimination of deadweight. This feature cuts total machine weight to eliminate stripping for highway travel!

You can get complete specifications, the how and why facts on American Cranes designed to do every job from excavation to steel setting, from your nearby distributor. Call him soon—he has a complete line of crawler and truck cranes in capacities from ½-yard, 12½-tons up!

(Advertisement)

"EASY ON THE OPERATOR" is Duane Cliffton's opinion of the American 100 Backhoe he operates for Forst Company. He adds, "It's easier to operate than any other machine I've been on. I like the brakes . . . and I can feel the load!" Operators find American's wide-range cab visibility and 13½-inch ground clearance are important features when trenching in rough, uneven terrain.







DESIGNED TO HANDLE a variety of fronts, on crawlers or rubber, is American's ¾-yard, 22½-ton 200 Series. Like the 100 Series, this machine incorporates many vital big crane features performance-proved in American 300 and 700 Series machines. Big crane features keep your job on schedule with sustained production month after month. Efficient design pares operating and maintenance costs to an amazingly low figure. Your American Distributor has all the facts on the American line!

A HIGHLY MOBILE SHOVEL, this American 100 Series ½-yard machine gives contractors high speed, trouble-free service. Because of their exceptional performance on the job—their mobility and speed between jobs—American Truck Cranes do more work in more places every day. A complete selection of interchangeable fronts lets you tailor your American to the job at hand. Low initial cost and contractor-proved low operating cost make the 100 Series Truck Cranes the value buy of the year!

"MORE CRANE FOR YOUR MONEY!" That's the benefit you get from American Hoist's 75 years of experience in the design and manufacture of cranes, derricks and hoists. American cranes have worked under every possible handicap while doing every type of job. It's this experience in a world-wide proving ground that has given American engineers the vital know-how essential in building efficient, trouble-free American cranes. Before you buy your next crane, talk to your American Distributor. He'll show you why American Cranes have captured first place in preference and performance with owners everywhere.

AMERICAN HOIST
and Derrick Company

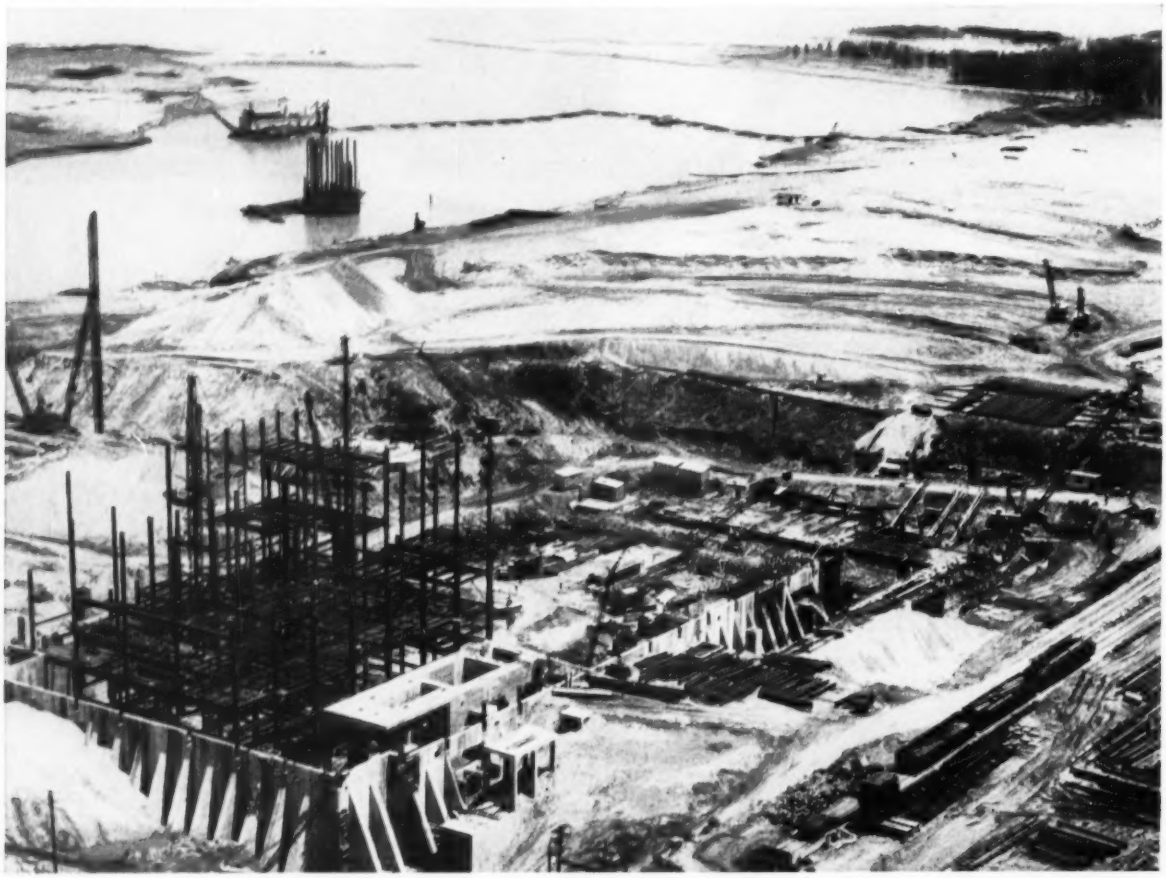
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St. Paul 7, Minnesota

HOW TO HANDLE WET JOBS

#39 of a Series

Project: Thos. H. Allen Electric Generating Station, Memphis, Tennessee
Engineers: Burns & Roe, Inc.
Contractor: J. A. Jones Construction Company
Pumping Contractor: WELLPOINT DEWATERING CORP., NEW YORK



Big excavation at Mississippi's edge faces tricky water problem. Here's how . . .

Dewatering Plan Safeguards Site as River Rises

With the Mississippi River due to rise, contractor J. A. Jones was confronted with this ground-water problem. The soil was medium to coarse sand with a stratified overburden. Seepage through the overburden — pressed on by the swollen river—would imperil the excavation slopes.

• **To head off trouble,** Griffin engineers devised a "double-play" strategy. Vertical sand drains were installed to intercept the seepage—then relay the water downward where it was handled by a wellpoint system.

• **Result: An economical** (1-stage) Griffin wellpoint system kept firm control of 28 ft of water—inside a perimeter of half-mile length. With dry conditions, the job proceeded safely, on schedule. When *you* have wet work, work with Griffin.

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Construction Methods AND EQUIPMENT

NOVEMBER, 1957

VOLUME 39 • NUMBER 11

HENRY T. PEREZ, Editor

Slow Pay—High Costs

CONTRACTORS have long been plagued with a shortage of money. Theirs is a business of low over-all profit margins and high borrowing costs. Increasingly tough competition intensifies the problem.

At the last Road Show, fears for the financial future were uppermost in the majority of contractors' minds. Events this year have done little to change the picture. Indeed, in many segments the situation has worsened.

The highway contractor has been especially vulnerable. Despite an increased amount of work—both in dollars and in physical volume (see p 48)—the roadbuilding industry has been, generally, unhappy.

Highway contracting requires a far higher capital investment in equipment than does, say, commercial building. And the roadbuilder's liquid assets are too often tied up for excessive lengths of time in retained percentages and unpaid estimates.

CM&E has long advocated lower retainages, faster payments of estimates, and such modern contract provisions as prompt reimbursement for such things as moving in of plant and machines and delivery of materials to the site.

Last month we published a chart indicating state highway department practices in regard to these items. The figures on payments are enlightening—if only to show the best treatment the individual states feel they can give their contractors at the present time.

But actually, few states live up to their implied promises: Contractors indicate that payments from the states are far slower than they should be. Also, progress payments are often smaller that the roadbuilder has a right to expect.

Well, if a state says there is only a 10-day time lag between date of estimate and actual payment to the contractor, it should not take 30 days. If it professes to make final payment eight weeks after project acceptance, the state should not expect the contractor to wait patiently for 20.

All the delays cost the constructor money. So does the too-frequent practice of trying to keep progress estimates, and thereby payments, unrealistically low.

Because of the nature of the contracting business, unfortunately, cost of borrowed money is high. For the state, it is low. In effect, then, the state and its taxpayers are paying the higher cost unnecessarily when it holds back the contractor's payments. It's false economy.

Instead of placing prestressed concrete bridge girders for the Simpson Lane Bridge near Marysville, Calif., on to piers from a barge derrick, the contractor found he could do the job much cheaper with this unusual method.

Bridge Girders Ride on Rails Across River

PRESTRESSED BRIDGE GIRDERS roll on rails into place over piers of the Simpson Lane Bridge near Marysville, Calif.

The bridge—which spans the Yuba River—replaces an outdated structure that washed out in 1955 during a severe flood. It has five 80-ft spans set over concrete piers. Each span consists of six prestressed concrete T-girders 3 ft 10 in. deep and 4 ft 2 in. wide at the T-flange.

Fabrication and erection contractor Ben C. Gerwick, Inc., cast the girders in a yard 200 mi from the job. To haul the 38-ton members to the job, Gerwick loaded them onto railroad flatcars that carried them to a siding 2 mi from the work site. There, Bigge Crane & Rigging Co. of Oakland, Calif., lifted them with a Bay City crane on to a truck trailer that transported them two at a time to the bridge site.

Next step normally would be to lift the girders into place by a crane positioned on the deck or on a barge. But that figured to be costly. William Talbot, Gerwick's chief engineer, worked out a trolley system for placing the girders that proved fast and safe.

The method centered around a pair of trolley rails made up of 36-in. 170-lb beams suspended from a series of temporary bents. The concrete girders, suspended from the rails, were rolled into place and set onto the piers.

Bents were made up of 12-in. tremie pipe supported on wood piles driven into the river bottom at opposite ends of the concrete piers. Double 15-in. beams 43 ft long connected the tops of the pipes. The trolley rails hung in pairs under the bents. Lacing between beams provided lateral stability. The rails temporarily were secured to the underside of the bent directly over the pier position where the girders came to rest.

The truck trailer carrying the girder rolled under the first pair of bents. There, the girder was raised one end at a time by Yale chain falls until the girder hung free from a roller mount that rode over the bottom flange of one of the beams. A Skagit winch positioned on the bank of the river opposite the loading end then pulled the girder into position over its final resting place with a ⅞-in. steel cable.

Once in position, the girder dropped over steel dowels cast into the top of the river pier. These dowels fit into inserts cast in the girder ends.

When a complete line of five girders has been placed, the rail was detached from the bents and moved over the next line of girders. This procedure was repeated until all lines of the span were completed.

Harry Larson is project manager on the job. Work is under the supervision of Alvin M. Finch, Yuba County Road Commissioner; Walter Ralphs is county resident engineer.



SUSPENDING THE GIRDERS—Yale 10-ton chain fall raises girder off truck trailer one end at a time. Girder will ride on wheeled dollies set over lower flange of beam rail.



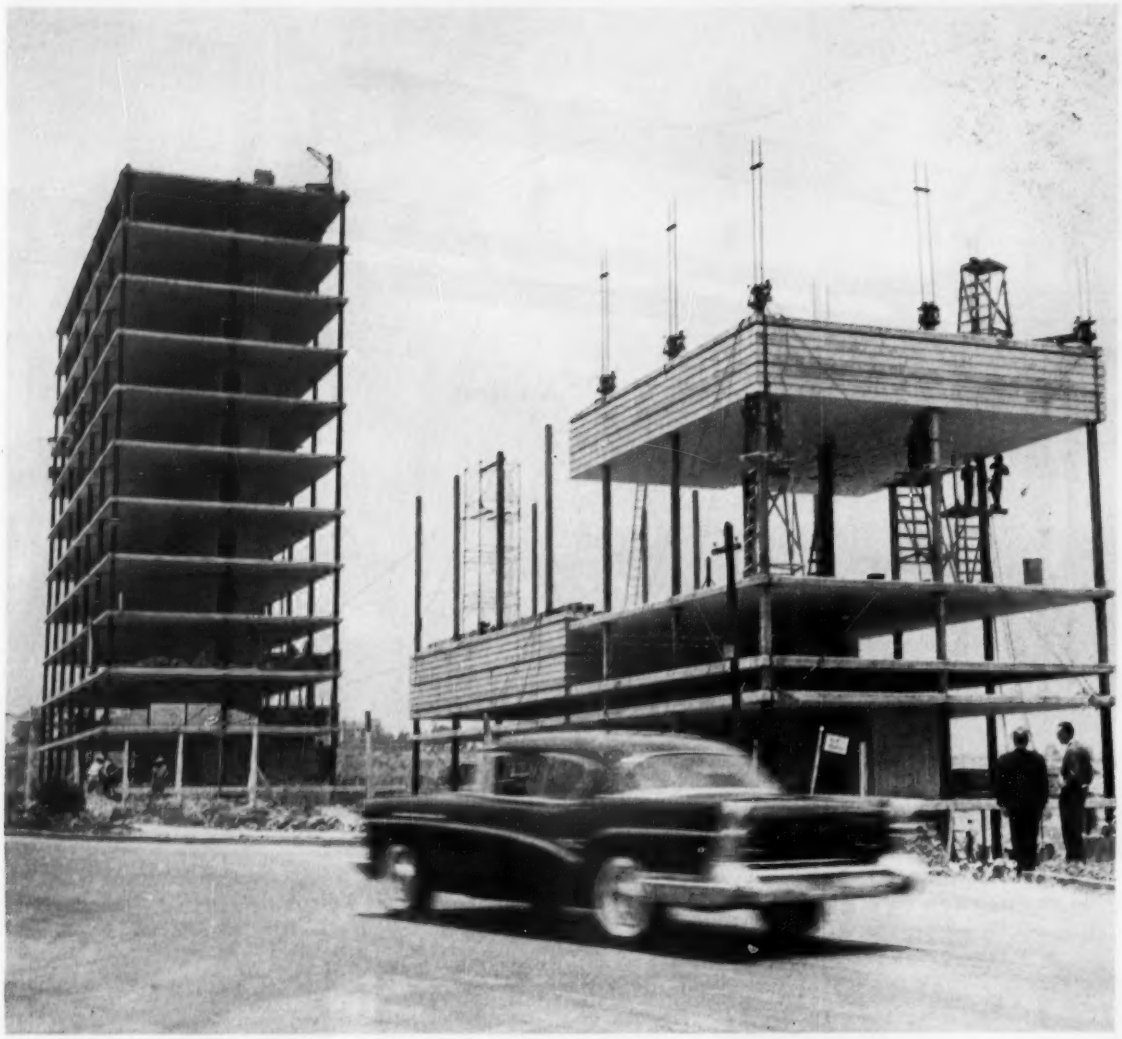
SUPPORTING THE RAILS—Temporary bents on either side of the piers support the trolley rails. Tremie pipe sections set over wooden piles driven through the river bottom serve as bent legs. I-beams placed under the bents serve as the rails.



BEGINNING THE RIDE—Winch set on opposite end of bridge pulls girder down line until it reaches its final position over piers.



SETTING GIRDER INTO PLACE—Stringer lowers onto steel dowels previously cast into pier. Trolley rails then are moved.



LIFT SLABS IN CLUSTERS—Topped-out building (left) awaits facade work as lifting just gets underway in next structure (right). Slab clusters are brought up in five lifts.

Mexicans Lift Slabs to 12-Story Height

THE "MEXICO COLUMN" a steel shaft uniform in outside dimensions but internally reinforced and easily spliced is responsible for the world's highest lift slab job to date—a building 12 stories high.

The job is part of a $5-million luxury cooperative apartment house project being built in Mexico City by Centros Urbanos, S.A., private Mexican builders.

The whole project consists of six buildings. They include a 12-story apartment house; four 11-story apartment buildings; and a large commercial center. Engineering the lift slab work is Lexama, Cortina Y Cia., S. A., Mexican licensee of the Youtz-Slick patents held by International Lift Slab Corp. of San Antonio.

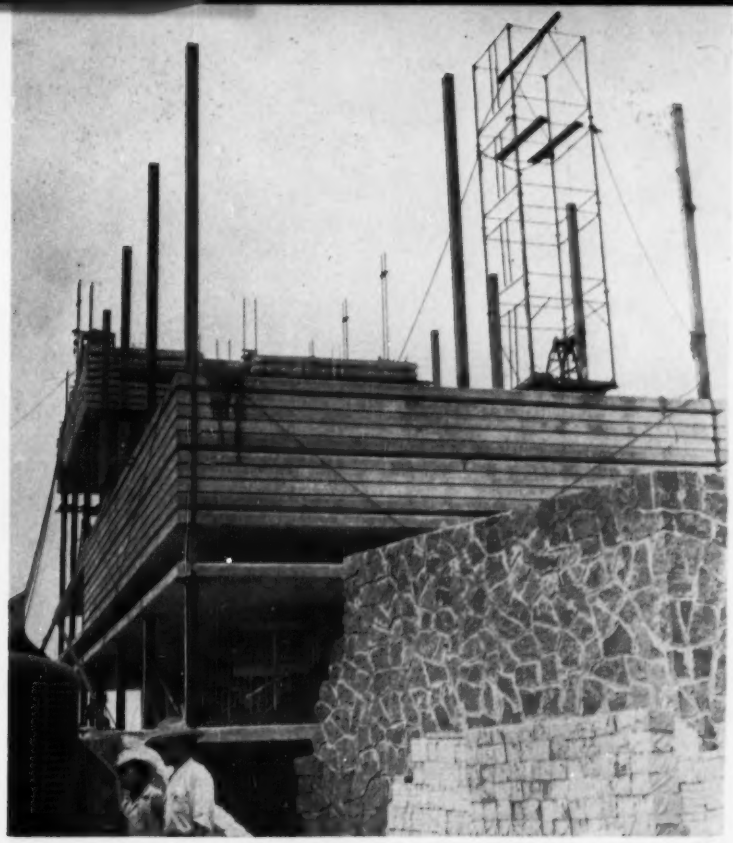
Normally, lift slab buildings are not attempted over six stories. Length, weight, and strength of steel columns that support slabs are not sufficient to do the jobs; and the lifting sequence of slabs is tricky.

The Mexico Column makes the job possible. This column, developed by Pascual Norguera, a design engineer for Lexama-Cortina, is spliced and welded in five vertical sections to take the column and slabs to a 101-ft height.

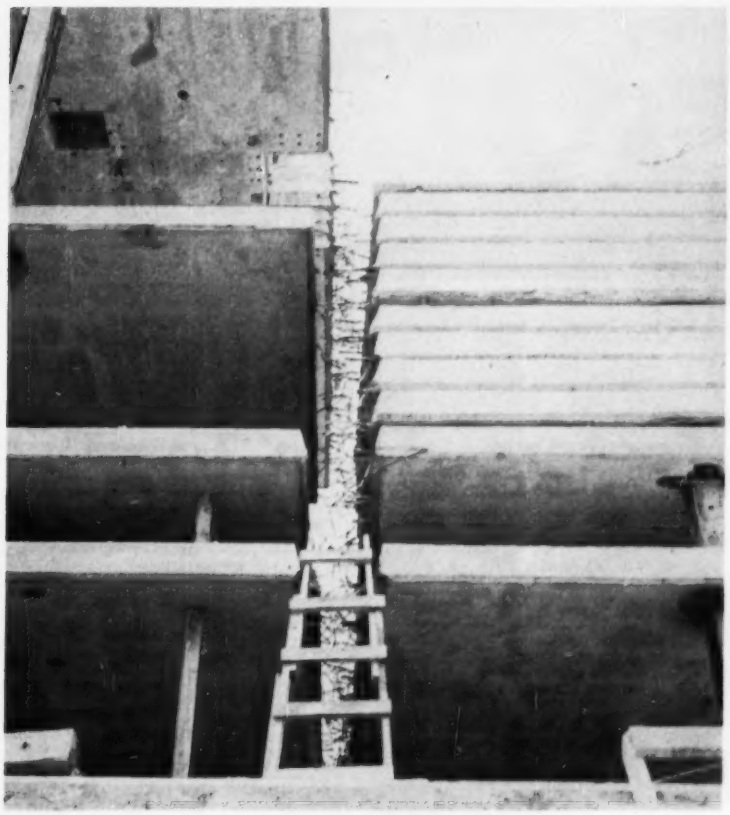
Splice Column Sections

The contractor places 12 three-story-high sections of column over isolated concrete footings set on bearing soil. A 10-in. concrete slab goes over the backfilled areas around the footings. This slab serves as the building's ground floor and as casting bed for the lift slabs.

Each of the 12 slabs measures 39x45 ft and is 10 in. thick. Sec-



SCAFFOLD TOWER RIDES ON SLAB—Tubular scaffold tower set on top slab provides a seat for workmen during splicing of additional column sections and for setting jacks.



CONNECTING THE SLABS—Slabs are poured adjacent to one another with protruding dowels. Workmen later will form between slabs and pour connecting concrete sections.

tions of cardboard tubing along with reinforcing rods are placed into the slab. The tubing, engineers claim, offers more strength to bending moment for the slab, and the hollowness that results also provides a sound-proofing element between floors.

Last step before a pour is to slip lifting rings around each column. These steel, flanged rings encircle the column and are partially embedded in the concrete. They have threaded holes on either side through which a lifting bar can be set. The upper ends of the lifting bars are attached to hydraulic jacks set over the columns.

Finally, 2,000-psi concrete is poured. This cures for two days and is moped over with Muldocreto, an oil-paraffin compound that serves as a bond breaker between slabs. Lifting then begins.

An hydraulic 150,000-lb jack made by International Lift Slab is placed over each column top to do the lifting. This jack pulls up the lifting rods that fit into the threaded opening of the column ring embedded in the concrete.

Twelve jacks are operated simultaneously from a control table that can feed fluid to all jacks at once or to each jack independently. Dials on the panel indicate how each jack is operating.

Slabs are lifted four at a time. When all 12 slabs have been lifted to the top of the first column length, a second section of Mexico Column is spliced on. Then, slabs (except for those for the lower stories) are raised to the top of the second column length. Additional splices are made, and the remaining slabs are raised until all 12 have been positioned and welded into place. Columns are held rigid during lifting by guy wires anchored to concrete dead men.

Three concrete cores in each building provide permanent rigidity and serve as elevator shafts. Sections of these cores are completed immediately after each new slab is lifted and welded to the steel columns.

The 12-story building now under construction escaped damage in the July 28 earthquake in the Lomas area of Mexico City. When completed the six buildings will cover 97,000 sq ft and have a combined floor space of 458,000 sq ft.



OVERTURNED CRANE—Soft soil at the edge of a fill spilled this 20-ton crane. Second crane has moved in, will remove boom and place it on truck waiting in background. Street was closed to traffic for about two hours during operation.

Crane Teeters—Then Topples

A BIG CRANE in action is a smooth mechanism that responds easily to one man's touch. But if it loses its footing it becomes as helpless as a whale floundering on the beach—and almost as hard to handle.

One way of handling an overturned crane is illustrated here by MacKay Trucking Corp. of New York, foundation subcontractor for an apartment building at 6th Ave. and 12th St. in New York City.

To get a crane to the interior footings they had built a short earth runway leading from the street. This worked well until a series of rainy days softened the fill. When the crane got too near the edge, the ground under the right front wheel gave way, tipping the crane over until its boom lay across 12th St.

No one was hurt, except the operator who was slightly injured jumping clear. And within a few hours MacKay had the crane on its feet again. These pictures show how they did it.







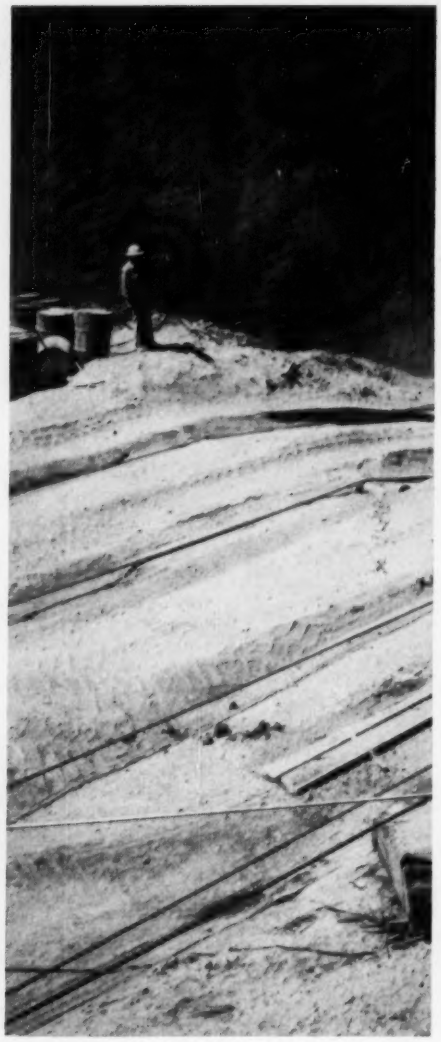
In a Matter of Minutes

With boom out of the way it didn't take long for the second crane to move in close and lift the body onto its wheels. Main lift was through cable to crane roof with second cable to chassis for stability. Sand-filled truck on road anchored chassis during lift.

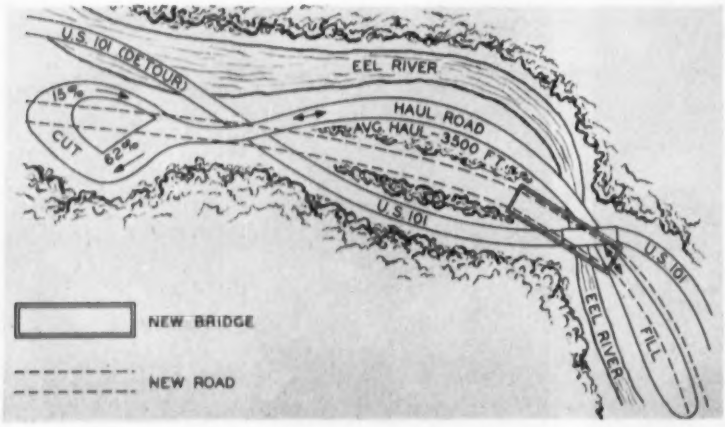


DAMAGE—Cab was badly bent in fall over edge of fill in foreground. Operator leaped clear, was hurt only slightly.





THREE AT A TIME—Logging yarders pull Guy F. Atkinson Co. scrapers up the 62% slope. Contractor must remove 1,400,000 yd in a sidehill cut that goes 480 ft deep.



SAVE THE TREES—Contractor has to haul his scrapers up the steep hill because California refused to allow his machines to go through the bordering redwood forest.

Winches

WORK rubber-tired scrapers on 525 ft of 62% adverse grade? It is possible—and profitable—with a little ingenuity.

Usually a contractor can take the long way around and work an easier grade. But Guy F. Atkinson Company, San Francisco, Calif., could not go outside the grade stakes on reconstruction of 4.4 mi of U. S. 101 from Dyerville to Redcrest in northern California. This is in the heart of the redwoods forest, and the state clamped on tight restrictions to preserve the virgin forests.



TOWING POWER—Four logging yarders—standard logging winches—each powered by twin Cummins or GM diesels with 400 hp tow the Cat DW20's up the 525-ft grade. Yarders mounted on logs are easily moved.

Haul Scrapers Up Steep Slope

More than 1,400,000 yd—half the total yardage on the job—are being hauled out of this one sidehill cut, 480 ft deep and 1,300 ft long. Most of the material must be hauled across the Eel River, at the foot of the cut, to fill in a river bar for the north approach to the bridge. Hauls average 3,500 ft but run as high as 7,000 ft. And all the grading on this cut must be completed before winter rains turn the clay into a quagmire because a 2,200-ft detour around the base of the hill must be removed by then to prevent diversion of flood currents against the opposite bank and undercutting of some of the giant trees.

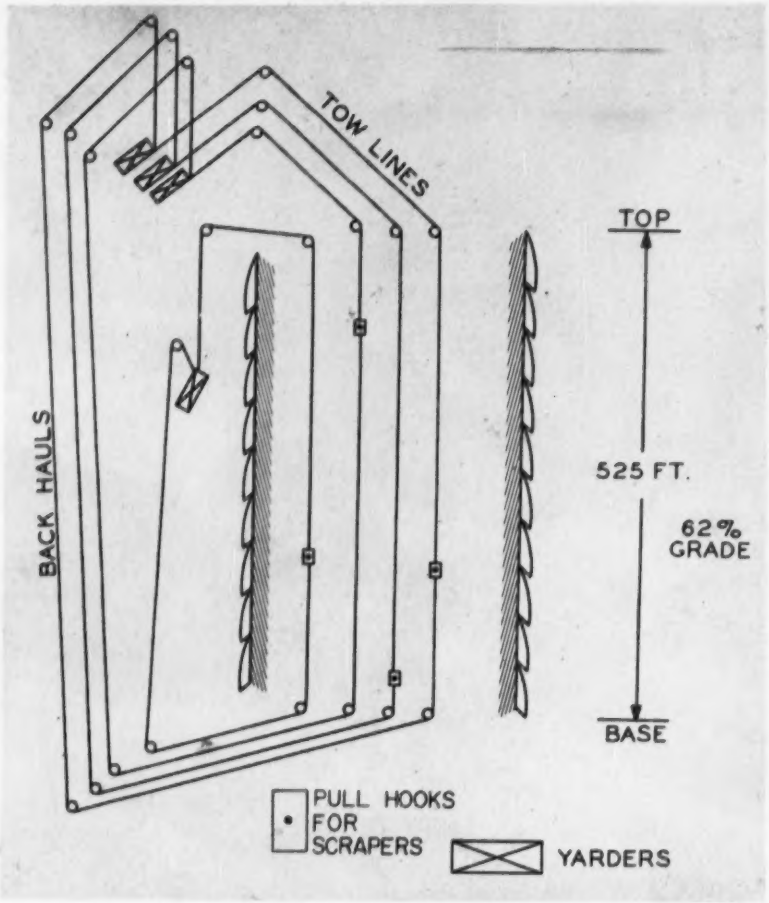
To complete the work in time, Atkinson set up a schedule of 20,000 yd a day from this cut. They are meeting this schedule by "yarding" 18 Caterpillar DW20 tractor-scrapers up the 62% slope.

As soon as clearing was completed, five Cat D9's moved in to pioneer the cut. Then four logging yarders were brought in to help the DW20's up the grade. Space was so restricted that only three yarders could be placed at the top of the hill; the fourth had to be dug into the side of the hill.

Yarders are standard logging winches. Atkinson mounted each of them on two large platforms that can be skidded to new locations. Each yarder is powered by twin Cummins or General Motors diesel engines, totaling 400 hp. The compounded engines drive two drums, one for the tow line, the other for the backhaul.

The tow line is run through fairleads to the top of each trail

continued on next page



FOUR TRAILS—Tow line from each yarder runs through fairlead sheaves to pull hook for scraper.. Back haul lines run to the foot of the hill and across to hooks.

and down the hill to the hook. The backhaul runs through fairleads to the base of the hill, across to the bottom of the trail, and up to the hook. Four such trails are set up about 10 ft apart. Under normal operations, three are sufficient to handle the traffic; the fourth is on standby.

The contractor also devised a quick, reliable hookup that requires no manual assistance. The hook is formed from 2-in. steel bar stock welded to a large steel sled about 1½ ft square. To prevent its digging in on the backhaul, the sled is turned up on the ends and slides on timbers.

A loop of ¾-in. wire is secured to the DW20's pull hooks, which are welded closed. The loop hangs about 4 in. from the ground, low enough to engage the hook easily. In the two months of this operation, no repairs or replacements on the hooks or wire loops have been necessary.

To engage the hook, the DW20 operator drives up over the hook, then eases back until the loop engages the hook and a strain is taken on the tow line. A checker inspects the hookup to make sure it is secure and waves the rig on. With a toot of its whistle, the yarder starts reeling the big scrapers up the hill. Each scraper reaches the top of the 525-ft hill in about 3 min, depending on how much assistance the tractor operator gives. Usually there are



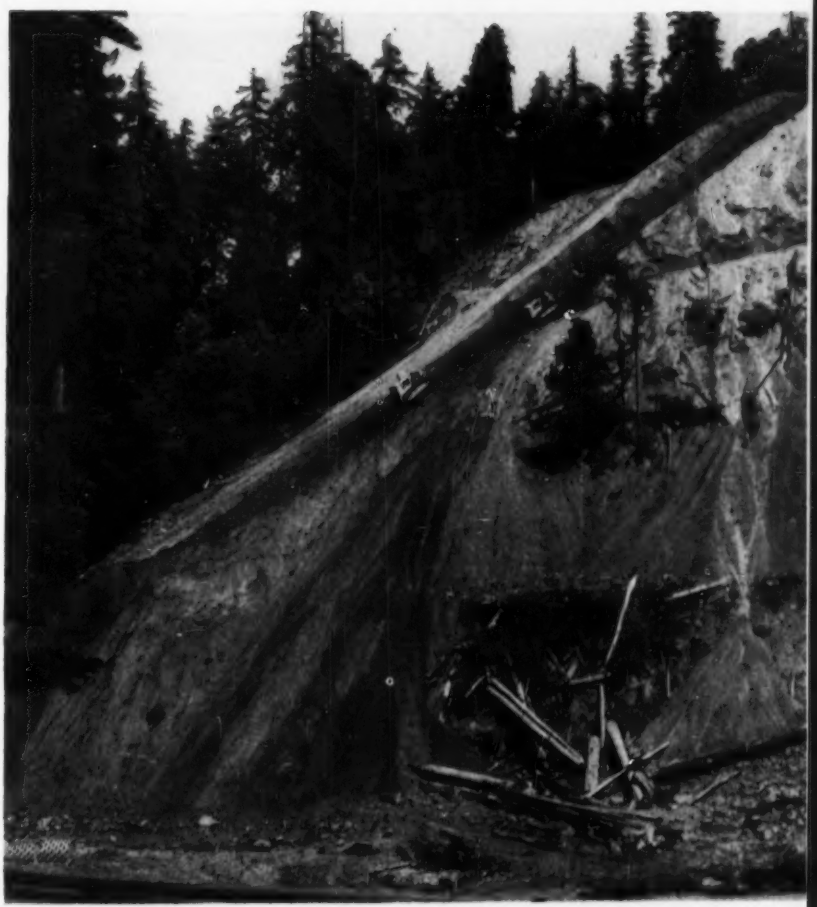
AT THE TOP—Tow line rides over the crest of the hill on an old D8 track roller with the center flange removed. Wood ramps carry scrapers over the top to avoid rutting.

two scrapers, and sometimes three, on the hill. Good control of the cycle has insured few waits for tow lines.

Safety is checked before yarding begins by letting a DW20 hold itself on the 62% slope with its brakes. With more than 500,000 yards moved in this manner, Atkinson has suffered only one accident. In that case, the hook apparently had not been engaged properly, and it pulled free. The scraper plunged to the bottom of the hill, but the operator jumped clear, climbed aboard another DW20, and went right back up the hill.

At the top, the scrapers load on a 15% down slope, with two Cat D9 pushers. A third D9 rips the rock and maintains the cut. About 50% of the cut is shale and broken sandstone, mixed with clay, alternating between good loading and hard ripping material. Some rock has had to be shot. This is handled with a Gardner-Denver jackhammer powered by a Joy compressor.

Originally the loaded scrapers hauled down a 40% slope, but this was gradually cut back to about 15% as about every third scraper started down with a partial load and self-loaded down the grade. With the grade reduced to 15% by mid-August, the DW-20's then were able to climb the hill unassisted. Yarding was discontinued, and the cycle was reversed, with the loaded scrapers hauling down the 62% grade. Good control of the scrapers down this grade is essential because both the river and U. S. 101 run past the foot of the hill.



PIONEERING—Two Cat D9 tractors open up the cut for the fleet of 18 scrapers. Atkinson's schedule calls for the scraper fleet to remove 20,000 yd a day from the cut.



EASY HOOKUP—Wire loop hanging from scraper engages hook without manual help.



AT BASE OF HILL—Hook on sled sets near fairlead sheave ready for next pickup.

A second spread of eight DW20's is working on a 400,000-yd cut at the north end of the job. In between, two spreads of crawler-drawn scrapers are working on short hauls, bogs, and stabilization trenches. Deep stabilization trenches for drainage pipe are needed to counter sliding caused by heavy rains soaking the woody soil. One trench was so steep the Cat D8's, pulling heavily loaded No. 80 scrapers, had to be assisted out of the trench by two I-H TD24's, one pushing and one pulling.

In addition to 30 DW20's, Atkinson is using 4 Euclid Scrapers, 5 Cat D9's, 22 D8's, 7 No. 80 scrapers, 6 TD24's, 3 HD16 load-



DEEP TRENCH—Two I-H TD24's, one pushing and one pulling, help a Cat D8 pull a heavily loaded scraper out of a deep stabilization trench for drainage pipe.



FILLING A RAVINE—Material excavated from stabilization trench provides fill for a ravine. As scraper dumps its load, tractor-drawn roller compacts the fill.



TRAFFIC ROLLS—A detour built on fill carries traffic 2,200 ft up the center of the Eel River while the scraper fleet cuts down the big hill a few yards away.

ers, 3 Cat No. 12 motor graders, 10 Le Tourneau and South West Sheepsfoot rollers, a Northwest 80D dragline, and 2 Bay City Motor Cranes. Much of the equipment is being rented locally, with the owners supplying maintenance for their own machines.

The completed road will have four 12-ft lanes separated by a 4-ft painted median and 7-ft outer shoulders. The 2 ft below subgrade must be compacted to 95% by the California impact 10-layer method. The roadbed structure is tested by the 5-layer method. Where a large amount of water is encountered, the subgrade is covered with 1 ft of gravel filter material containing less than 3% 200 mesh material. Next comes 6 in. of river run gravel scalped of all material over 2½ in. and compacted to 95%. This is topped with 8 in. of cement-treated base. This is 1½-in. gravel with approximately 4% portland cement compacted to 100%. Then it is surfaced with 3 in. of plant mix sealed with ½-in. open graded surfacing.

Slopes are cut 1 to 1, with 20-ft benches every 60 ft. Fill areas are stripped of unsuitable material. Filter material is placed and perforated drainage pipe is installed. Fill slopes are 1½ to 1, ripraped on river fill. Light stone riprap will be grouted with concrete.

Atkinson expects to complete all the stabilization work and to install all permanent drainage this season. Before the rains begin, they also must remove the 2,200-ft detour around the big cut. About a third of this fill was washed out early in the summer when an unexpected rain sent a 13-ft flash flood down the river.

Gordon G. Bawden is in charge for the contractor. Assisting him are Phil Smith, project engineer; Ed Hunt, office manager; Lyman Snyder, excavation superintendent; Gordon Melton, master mechanic; Charles Skelton, carpenter superintendent; and Fred Hogodone, labor superintendent. Atkinson employs approximately 250 men on the job, working two 10-hr shifts on the big cut, one shift on all other work.

In charge of the $6.8-million contract for the California Division of Highways is Sam Helwer, district engineer, and Charles P. Sweet, assistant district engineer.







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after the storm

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THE AUTOCAR 6-WHEEL CEMENT MIXER, capacities from 5½ to 14 cubic yards. Designed as an integrated, balanced unit, and specifically for the job.



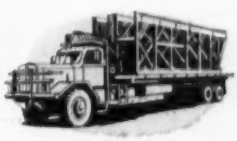
THE AUTOCAR 6-WHEEL HIGHWAY TRACTOR pulls heavy payloads on long hauls. A real profitmaker in those states where multiple axles permit additional payload.



THE AUTOCAR 6-WHEEL LUMBER TRUCK drives right into the felling area and picks up a profitable load, with the sturdy construction and braking power to control it.



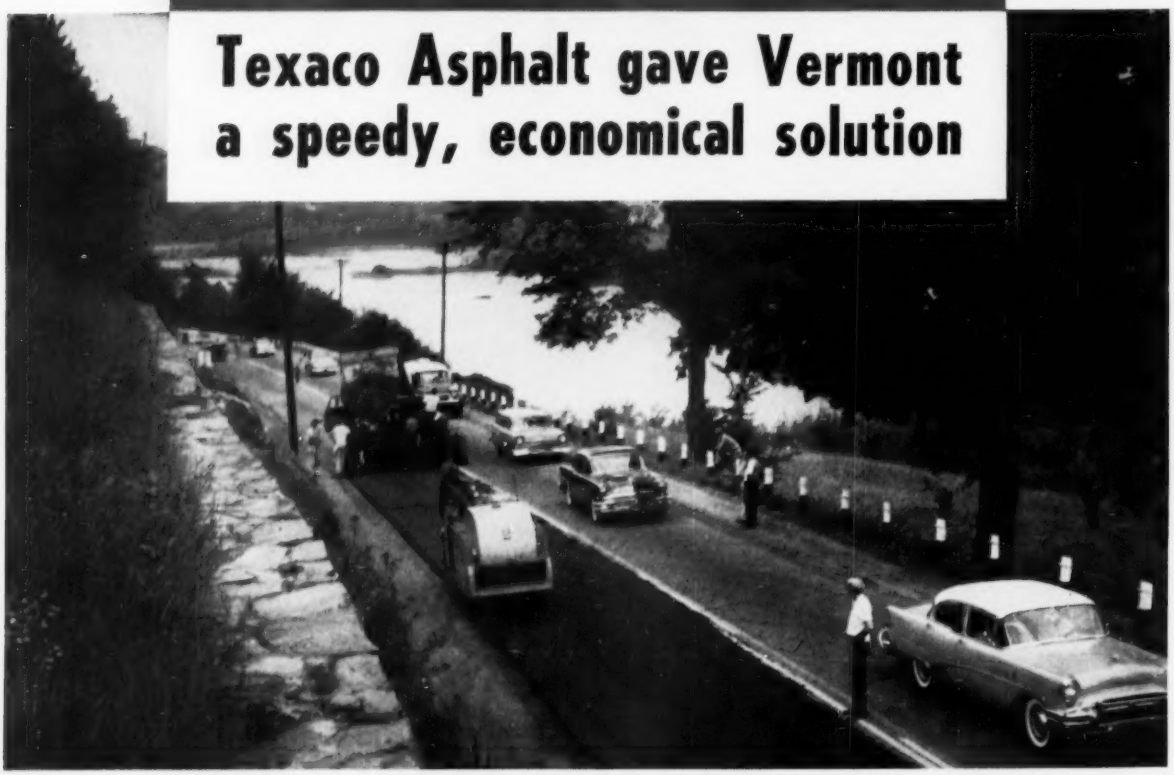
THE AUTOCAR 6-WHEEL OIL FIELD UNIT, ideal for hauling heavy loads. A sure winner over a rough track and geared to keep up with traffic on the highway.





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Texaco Asphalt gave Vermont a speedy, economical solution



Modernizing US-5 in Vermont with a plant-mixed Texaco Asphaltic Concrete wearing surface, laid without interrupting traffic.

CONTRACTORS

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U.S. Route 5, north of Bellows Falls, Vt., like thousands of miles of American roads, had a bituminous-treated gravel surface.

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Specs for Your Files...



Steel Rollers p.96

CM&E continues its "Specs for Your Files" series with comparative specification charts covering portable, two and three-axle tandem, and three-wheel self-propelled steel rollers. Listed separately are up-to-date specifications for pneumatic-tired units. The comparative listings show up four continuing trends for both types: almost all rollers offer torque converter drive (with automatic reversing transmissions for steel rollers) as standard or optional equipment; almost all offer full-time, hydraulic-powered steering systems; engines are more powerful and a greater variety of engine options is available; the popularity of variable-weight models continues to grow.



Pneumatic Rollers p.100

STEEL ROLLERS—1957

	MAKE AND MODEL*		TYPE	WEIGHT, LBS.										COMPRESSION LB/LINEAL IN./ROLL FACE					
			Portable Tandem, Tandem, 3-Axle Tandem (3 AT), 3-Wheel	On Guide Roll(s), Dry	On Compression Roll(s), Dry	Total Weight, Dry	On Guide Roll(s), Water Ballast	On Compression Roll(s), Water Ballast	Total Water Ballast	On Guide Roll(s), Wet Sand Ballast	On Compression Roll(s), Wet Sand Ballast	Total Wet Sand Ballast	Guide Roll(s), Dry	Compression Roll(s), Dry	Guide Roll(s), Water Ballast	Compression Roll(s), Water Ballast	Guide Roll(s) Wet Sand Ballast	Compression Roll(s), Wet Sand Ballast
1	AUSTIN-WESTERN	3 1/2-6-ton	Tandem	2,690	4,258	6,948	3,565	6,487	10,052	–	8,716	12,281	67	101	89	154	–	207
2		5-8-ton	Tandem	4,868	6,755	11,623	6,768	9,755	16,523	–	12,755	19,523	97	135	133	195	–	255
3		8-12-ton	Tandem	6,369	10,100	16,469	9,812	14,471	24,283	–	18,842	28,654	118	187	184	268	–	348
4		10-14-ton	Tandem	6,369	13,723	20,092	9,812	18,094	27,906	–	22,465	32,277	118	254	184	335	–	416
5		8-11-ton	3-Wheel	5,074	11,337	16,411	6,494	13,201	19,695	–	15,065	21,559	127	354	162	366	–	412
6		10-12-ton	3-Wheel	6,930	13,132	20,062	8,730	16,392	25,122	–	19,552	28,282	157	328	198	409	–	488
7		12-14-ton	3-Wheel	6,930	17,110	24,040	8,730	20,870	29,600	–	24,630	33,360	157	356	198	434	–	515
8	BUFFALO-SPRINGFIELD	KT-7A	Tandem	2,563	4,257	6,820	3,293	5,707	9,000	–	6,747	10,040	67	112	87	150	–	178
9		KT-8	Port. Tandem	3,015	5,235	8,250	3,715	7,455	11,170	–	8,595	12,310	79	138	98	196	–	226
10		KT-15A5	Tandem	4,650	7,550	12,200	6,250	9,850	16,100	–	–	–	93	151	125	197	–	–
11		KT-16D	Tandem	4,574	7,645	12,219	6,266	9,734	16,000	–	–	–	91	153	125	195	–	–
12		KT-17D	Tandem	4,574	9,145	13,719	6,266	11,234	17,500	–	–	–	91	183	125	225	–	–
13		KT-15A6	Tandem	4,650	9,250	13,900	6,250	11,350	17,600	–	–	–	93	185	125	227	–	–
14		KT-15A8	Tandem	5,750	11,000	16,740	7,250	13,250	20,520	–	–	–	115	220	145	265	–	–
15		KT-19A8	Tandem	6,790	10,025	16,815	9,652	14,525	24,177	–	–	–	126	186	179	269	–	–
16		KT-24D	Tandem	6,400	10,665	17,065	9,300	14,735	24,035	–	18,195	27,495	118	198	172	273	–	337
17		KT-25D	Tandem	6,400	14,465	20,865	9,300	18,535	27,835	–	21,995	31,295	118	268	172	343	–	407
18		KT-19A10	Tandem	7,430	13,710	21,140	10,182	17,895	28,077	–	–	–	138	254	189	331	–	–
19		KX-25E	3 AT	6,790 6,790	13,790	27,370	9,740 9,740	17,490	36,970	–	20,690	40,170	126 126	255	180 180	324	–	383
20		VM-31D	3-Wheel	6,200	14,700	20,900	7,850	17,388	25,238	–	20,076	27,926	141	368	178	435	–	502
21		VM-32D	3-Wheel	7,300	16,900	24,200	8,880	19,420	28,300	–	21,940	30,820	166	422	202	485	–	548
22	ESSICK	550EH	Tandem	2,200	5,208	7,408	3,160	7,980	11.286	–	–	–	55	124	79	190	–	–
23		800	Tandem	5,000	6,500	11,500	6,500	10,750	17,250	–	–	–	100	130	130	215	–	–
24		1050	Tandem	5,000	11,315	16,315	6,500	14,945	21,445	–	–	–	100	226	130	299	–	–
25		1200	Tandem	6,600	9,574	16,174	9,750	14,869	24,619	–	–	–	122	177	181	275	–	–
26		1400	Tandem	6,600	13,565	20,165	9,750	18,350	28,100	–	–	–	122	251	181	340	–	–
27	FERGUSON	3-5-ton	Port. Tandem	2,846	4,284	7,130	3,950	6,400	10,350	4,100	7,872	11,972	71	102	98	152	102	187
28		4-6-ton	Port. Tandem	3,594	5,406	9,000	4,698	7,622	12,320	4,848	8,992	13,840	89	129	117	181	121	214
29		5-8-ton	Tandem	4,250	7,450	11,700	6,350	11,250	17,600	7,000	14,000	21,000	85	150	125	220	140	280
30		8-12-ton	Tandem	6,080	11,318	17,398	8,721	15,471	24,192	10,480	18,578	29,058	112	209	161	286	195	344
31	GALION	PT	Port. Tandem	1,650(J)	5,450	7,100	1,690(J)	8,075	9,765	–	–	–	–(J)	130	–(J)	192	–	–
32		3-5-ton	Tandem	2,700	4,950	7,650	3,600	7,550	11,150	–	–	–	67.5	118	89	180	–	–
33		4-6-ton	Tandem	3,100	6,060	9,160	4,000	8,660	12,660	–	–	–	77.5	144	100	206	–	–
34		5-8-ton	Tandem	5,500	6,600	12,100	7,245	10,585	17,830	–	–	–	110	132	145	212	–	–
35		8-10 1/2-ton	Tandem	6,450	9,735	16,185	8,075	13,520	21,595	–	–	–	129	195	162	270	–	–
36		8-12-ton	Tandem	6,900	10,100	17,000	9,680	15,340	25,020	9,680	19,656	29,336	128	187	179	284	179	364
37		10-14-ton	Tandem	7,765	12,435	20,200	10,200	17,810	28,010	10,200	21,980	32,180	144	230	189	330	189	407
38		14-20-ton	3 AT	5,920 5,920	17,000	28,840	9,030 9,030	22,005	40,065	–	–	–	110 110	315	167 167	408	–	–
39		7-ton Spoke	3-Wheel	4,440	10,235	14,675	–	–	–	–	–	–	108	256	–	–	–	–
40		8-ton Spoke	3-Wheel	5,400	11,225	16,625	–	–	–	–	–	–	132	281	–	–	–	–
41		10-ton Spoke	3-Wheel	6,200	15,410	21,610	–	–	–	–	–	–	141	321	–	–	–	–
42		12-ton Spoke	3-Wheel	7,450	17,900	25,350	–	–	–	–	–	–	169	373	–	–	–	–
43		7-9 Ton	3-Wheel	4,075	10,600	14,675	5,760	13,540	19,300	–	–	–	99	265	140	339	–	–
44		8-10 Ton	3-Wheel	5,200	11,925	17,125	6,775	14,650	21,425	–	–	–	127	298	165	366	–	–
45		10-14 Ton	3-Wheel	6,320	15,420	21,740	8,070	20,050	28,120	–	–	–	144	321	183	418	–	–
46		12-16 Ton	3-Wheel	6,320	19,790	26,110	8,200	23,800	32,000	–	–	–	144	412	186	496	–	–
47	HUBER-WARCO	3-5-ton	Tandem	2,700	4,090	6,790	3,790	6,720	10,510	–	–	–	67	97	94	160	–	–
48		5-8-ton	Tandem	4,820	7,440	12,260	6,560	10,740	17,300	–	–	–	96	148	131	214	–	–
49		8-10-ton	Tandem	6,460	9,780	16,260	8,150	12,230	20,380	–	–	–	129	195	163	244	–	–
50		8-12-ton	Tandem	6,164	10,000	16,164	9,059	15,040	24,099	–	–	–	114	185	170	278	–	–
51		10-14-ton	Tandem	7,044	12,960	20,004	9,806	17,600	27,406	–	–	–	130	240	181	326	–	–
52		10-ton	3-Wheel	6,450	13,750	20,200	–	–	–	–	–	–	146	343	–	–	–	–
53		12-ton	3-Wheel	7,750	16,450	24,200	–	–	–	–	–	–	176	411	–	–	–	–
54		14-ton	3-Wheel	9,025	19,175	28,200	–	–	–	–	–	–	206	479	–	–	–	–
55		10-12-ton	3-Wheel	6,360	13,960	20,320	8,290	16,720	24,950	–	–	–	144	349	187	418	–	–
56		12-14-ton	3-Wheel	6,360	17,085	23,445	8,230	19,645	27,875	–	–	–	144	427	187	491	–	–

*With a dry weight of at least 6,000 lb.
**Practically all models has a choice of gasoline engines. Only standard engine is listed. Price covers machine with standard engine.
‡ Available with diesel engine.
(a) All models available with 4-speed transmission.
(b) Available with 24-in. rolls.
(c) Available with 22-in. rolls.
(d) Available with 20-in. rolls.
(e) Available with 18-in. rolls.
(f) Available with torque converter and 2-range transmission (direct drive is standard)
(g) With machine in rolling position (wheels retracted).
(h) Torque converter available.
(j) On tires (no guide roll).
(k) Speeds variable on torque converter models.
(l) Two-range transmission available for torque converter models.
NA Specification not available from the manufacturer.

	ROLL DIMENSIONS, IN.						POWER TRAIN															DIMENSIONS, OVERALL, IN.						PRICE
							ENGINE							TRANSMISSION															
Overall Rolling Width	Guide Roll, No. of Sections	Guide Roll, Dia. x Width, (Total All Sections)	Guide Roll, Thickness	Compression Roll(s), Dia. x Width	Compression Roll(s), Thickness	Make ••	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	No. of Cycles	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range, Forward Speeds, MPH	No. of Reverse Speeds	Range, Reverse Speed, MPH	Clutch, Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning Radius	FOB, Factory, Standard Model	
42	2	32 x 40	1/2	48 x 42	5/8	Wisc.	VG4D	G	36	2200	4	4	12-1/2	2[a]	1.13-4.46	2	1.13-4.46	Fric.	Hyd	129	52	51	85	11.3	170	$4,395	1
50	2	41 x 50	5/8	53 x 50	7/8	Ford	J	G‡	75	1650	8	4	28	2	.88-3.3	2	.88-3.3	TC	Hyd	177	64	72	120	15.5	216	7,011	2
54	2	48 x 54	5/8	60 x 54	1 1/4	Ford	J	G‡	75	1650	8	4	28	2	.99-3.72	2	.99-3.72	TC	Hyd	190	68	75	130	19	240	8,490	3
54	2	48 x 54	5/8	60 x 54	1 1/4	Ford	J	G‡	75	1650	8	4	28	2	.99-3.72	2	.99-3.72	TC	Hyd	190	68	75	130	19	240	9,079	4
67	2	41 x 40	3/4	60 x 18	1 1/2	Ford	J	G‡	75	1650	8	4	33	2	.99-3.73	2	.99-3.73	TC	Hyd	205	67	67	130	15	227	9,060	5
75	2	44 x 44	3/4	69 x 20[b]	1 1/2	Ford	J	G‡	75	1650	8	4	33	2	1.14-4.3	2	.99-3.73	TC	Hyd	207	75	71	130	19.5	231	9,550	6
83	2	44 x 44	3/4	69 x 24	1 1/2	Ford	J	G‡	75	1650	8	4	38	2	1.14-4.3	2	.99-3.73	TC	Hyd	207	83	71	130	19.5	231	10,039	7
38	2	30 x 38	NA	40x38	NA	Cont.	Y-112	G	29	2000	4	4	12	–[k]	.5-5.3	–[k]	.5-5.3	TC	Hyd	127	–	74	88	13	174	NA	8
38	2	30 x 38	NA	40x38	NA	Cont.	Y-112	G	29	2000	4	4	12	–[k]	.5-5.3	–[k]	.5-5.3	TC	Hyd	127	60[g]	74[g]	88	13[g]	174	NA	9
50	2	40x50	NA	53x50	NA	Cont.	F-162	G‡	49	2450	4	4	26	–[k]	1-5.4	–[k]	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	10
50	2	40x50	NA	53x50	NA	Cont.	F-226	G‡	48	1400	6	4	30	4	1.1-5	4	1.1-5	–[f]	Hyd	172	66	93	118	17	214	NA	11
50	2	40x50	NA	53x50	NA	Cont.	F-226	G‡	48	1400	6	4	30	4	1.1-5	4	1.1-5	–[f]	Hyd	172	66	93	118	17	214	NA	12
50	2	40x50	NA	53x50	NA	Cont.	F-162	G‡	49	2450	4	4	26	–[k]	1-5.4	–[k]	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	13
50	2	40x50	NA	53x50	NA	Cont.	F-162	G‡	49	2450	4	4	26	–[k]	1-5.4	–[k]	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	14
54	2	48x54	NA	60x54	NA	Cont.	F-226	G‡	72	2450	6	4	34	–[k]	1-5.6	–[k]	1-5.6	TC	Hyd	195	70	91	131	14	236	NA	15
54	2	48x54	NA	60x54	NA	Herc.	J x D	G‡	64	1400	6	4	30	4	1.1-5	4	1.1-5	–(f)	Hyd	196	72	102	131	19	236	NA	16
54	2	48x54	NA	60x54	NA	Herc.	J x D	G‡	64	1400	6	4	30	4	1.1-5	4	1.1-5	–(f)	Hyd	196	72	102	131	19	236	NA	17
54	2	48x54	NA	60x54	NA	Cont.	F-226	G‡	72	2450	6	4	34	–[k]	1-5.6	–[k]	1-5.6	TC	Hyd	195	70	91	131	14	236	NA	18
54	2	45x54	NA	60x54	NA	Herc.	JxLD	G‡	72	1400	6	4	30	4	1.1-5	4	1.1-5	–(f)	Hyd	273	72	102	208	19	356	NA	19
76	2	44x44	NA	69x20[b,c]	NA	Herc.	JxLD	G‡	72	1400	6	4	35	4	1.1-5	4	1.1-5	–(f)	Hyd	209	76	81	128	15	228	NA	20
76	2	44x44	NA	69x20[b,c]	NA	Herc.	JxLD	G‡	72	1400	6	4	35	4	1.1-5	4	1.1-5	–(f)	Hyd	209	76	81	128	15	228	NA	21
42	2	34x40	1/2	48x42	3/4	Wisc	VF4D	G	25	2400	4	4	9	2	1-5	2	1-5	Fric	Hyd, Mech	120	50	68	78	15	178	3,720	22
50	2	40x50	3/4	53x50	3/4	Chry.	30	G‡	63	1800	6	4	32	2	1-5	2	1-5	Fric[h]	Hyd	175	61	82	125	14	216	6,390	23
50	2	40x50	3/4	53x50	3/4	Chry.	30	G‡	63	1800	6	4	32	2	1-5	2	1-5	Fric[h]	Hyd	175	61	82	125	14	216	7,110	24
54	2	48x54	3/4	60x54	1	Chry.	52	G	73	2000	8	4	32	2	.8-5.5	2	.8-5.5	Fric[h]	Hyd	194	66	96	135	16	234	8,160	25
54	2	48x54	3/4	60x54	1	Chry.	52	G	73	2000	8	4	32	2	.8-5.5	2	.8-5.5	Fric[h]	Hyd	194	66	96	135	16	234	8,750	26
42	2	33x40	5/8	48x42	3/4	Wisc.	VH-4	G	26.5	2200	4	4	7	2	1.9-4.5	2	1.9-4.5	Fric	Hyd	132	80	60	86	12	202	4,450	27
42	2	33x40	3/4	48x42	1	Wisc.	VH-4	G	26.5	2200	4	4	7	2	1.9-4.5	2	1.9-4.5	Fric	Hyd	132	80	60	86	12	202	4,650	28
50	2	40x50	3/4	53x50	1	Chry.	31-219	G‡	81	2400	6	4	25	2	1-4.5	2	1-4.5	Fl.Clpg.	Hyd	174	60	67	124	13	216	6,000	29
54	2	48x54	3/4	60x54	1 1/4	Cont.	F-226	G‡	73	2400	6	4	25	2	1-5.5	2	1-5.5	TC	Hyd	199	69	95	141	15	228	7,750	30
42	–[j]	–[j]	–[j]	48x42	13/16	Wisc.	VG-4D	G	25	1500	4	4	10	2	1.5-3.4	2	1.5-3.4	Fric	Hyd	126	52	72	74	15	216	NA	31
42	2	30x40	5/8	48x42	13/16	Wisc.	VG-4D	G	25	1500	4	4	10	2	1.5-3.4	2	1.5-3.4	Fric	Hyd	117	52	72	74	16	198	NA	32
42	2	30x40	5/8	48x42	13/16	Wisc.	VG-4D	G	25	1500	4	4	10	2	1.5-3.4	2	1.5-3.4	Fric	Hyd	126	89	72	74	9	198	NA	33
50	2	40x50	13/16	53x50	15/16	Cont.	F-162	G‡	49	2400	4	4	24	–[k]	.5-5.5[l]	–[k]	.5-5.5[l]	TC	Hyd	178	66	86	124	13	212	NA	34
50	2	40x50	13/16	53x50	15/16	Cont.	F-162	G‡	49	2400	4	4	24	–	.5-5.5	–	.5-5.5	TC	Hyd	178	66	86	124	13	212	NA	35
54	2	48x54	13/16	60x54	1 1/8	Cont.	F-226	G‡	73	2400	4	4	31	–	.5-5.5	–	.5-5.5	TC	Hyd	200	69	92	138	14	225	NA	36
54	2	48x54	13/16	60x54	1 1/8	Cont.	F-226	G‡	73	2400	4	4	31	–	.5-5.5	–	.5-5.5	TC	Hyd	200	69	92	138	14	225	NA	37
54	4	48x54	13/16	60x54	1 1/8	Cont.	M-330	G‡	92	2400	4	4	31	–	.5-5.5	–	.5-5.5	TC	Hyd	270	69	92	209	14	356	NA	38
74	2	38x41	1 9/16	60x20[e]	1 3/4	Cont.	F-162	G‡	49	2400	4	4	NA	–	.5-5.5	–	.5-5.5	TC	Hyd	190	74	71	118	15.5	177	NA	39
74	2	38x41	2 1/4	60x20[e]	2 1/2	Cont.	F-162	G‡	49	2400	4	4	NA	–	.5-5.5	–	.5-5.5	TC	Hyd	190	74	71	118	15.5	177	NA	40
84	2	44x44	2	69x24[d]	2 3/8	Cont.	F 244	G‡	79	2400	4	4	38	–	.5-5.5	–	.5-5.5	TC	Hyd	208	84	81	130	18	204	NA	41
84	2	44x44	2 1/2	69x24[d]	3 1/4	Cont.	F-244	G‡	79	2400	4	4	38	–	.5-5.5	–	.5-5.5	TC	Hyd	208	84	81	130	18	204	NA	42
74	2	38x41	13/16	60x20[e]	1 3/8	Cont.	F-162	G‡	49	2400	4	4	NA	–	.5-5.5	–	.5-5.5	TC	Hyd	190	74	71	118	15.5	177	NA	43
74	2	38x41	1 7/8	60x20[e]	2 1/8	Cont.	F-162	G‡	49	2400	4	4	NA	–	.5-5.5	–	.5-5.5	TC	Hyd	190	74	71	118	15.5	177	NA	44
84	2	44x44	1 3/8	69x24[d]	1 3/4	Cont.	F-244	G‡	79	2400	4	4	38	–	.5-5.5	–	.5-5.5	TC	Hyd	208	84	81	130	18	204	NA	45
84	2	44x44	1 3/8	69x24[d]	2 1/2	Cont.	F-244	G‡	79	2400	4	4	38	–	.5-5.5	–	.5-5.5	TC	Hyd	208	84	81	130	18	204	NA	46
42	2	34x40	3/8	48x42	3/4	Herc.	IxB	G	41	2400	4	4	16 1/2	1	.5-5.6	1	.5-5.6	TC	Hyd	131	55	73	84	12	138	NA	47
50	2	40x50	5/8	53x50	7/8	Herc.	GO-173	G‡	58.5	2400	4	4	25 1/2	2	1.5-3.5 3.7-5.75	2	1.5-3.5 3.7-5.75	TC	Hyd	177	60	84	121	14	210	NA	48
50	2	40x50	5/8	53x50	7/8	Herc.	GO-173	G‡	58.5	2400	4	4	25 1/2	2	1.5-3.5 3.7-5.75	2	1.5-3.5 3.7-5.75	TC	Hyd	177	60	84	121	14	210	NA	49
54	2	48x54	3/4	60x54	1	Herc.	GO-226	G‡	77	2400	4	4	35	2	1.5-3.4 3.8-5.5	2	1.5-3.4 3.8-5.5	TC	Hyd	197	66	96	132	16	228	NA	50
54	2	48x54	3/4	60x54	1	Herc.	GO-226	G‡	77	2400	4	4	35	2	1.5-3.4 3.8-5.5	2	1.5-3.4 3.8-5.5	TC	Hyd	197	66	96	132	16	228	NA	51
76	2	44x44	1 3/4	69x20[b]	1 3/4	Herc.	GO-339	G‡	100	2000	6	4	40	2	1.4-3.8 3.7-5.75	2	1.4-3.8 3.7-5.75	TC	Hyd	206	76	81	127	18.5	243	NA	52
76	2	44x44	1 3/4	69x20[b]	1 3/4	Herc.	GO-339	G‡	100	2000	6	4	40	2	1.4-3.8 3.7-5.75	2	1.4-3.8 3.7-5.75	TC	Hyd	206	76	81	127	18.5	243	NA	53
76	2	44x44	1 3/4	69x20[b]	1 3/4	Herc.	GO-339	G‡	100	2000	6	4	40	2	1.4-3.8 3.7-5.75	2	1.4-3.8 3.7-5.75	TC	Hyd	206	76	81	127	18.5	243	NA	54
76	2	44x44	1 1/8	69x20[b]	1 1/8	Herc.	GO-339	G‡	100	2000	6	4	40	2	1.4-3.8 3.7-5.75	2	1.4-3.8 3.7-5.75	TC	Hyd	206	76	81	127	18.5	243	NA	55
76	2	44x44	1 1/8	69x20[b]	1 1/8	Herc.	GO-339	G‡	100	2000	6	4	40	2	1.4-3.8 3.7-5.75	2	1.4-3.8 3.7-5.75	TC	Hyd	206	76	81	127	18.5	243	NA	56

Austin-Western Works, Baldwin-Lima-Hamilton Corp., 601 N. Farnsworth, Aurora, Ill.
Buffalo-Springfield Roller Co., 1210 Kenton St., Springfield, O.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.
Shovel Supply Co., 4900 Mines Blvd., Dallas, Tex. (Ferguson rollers)

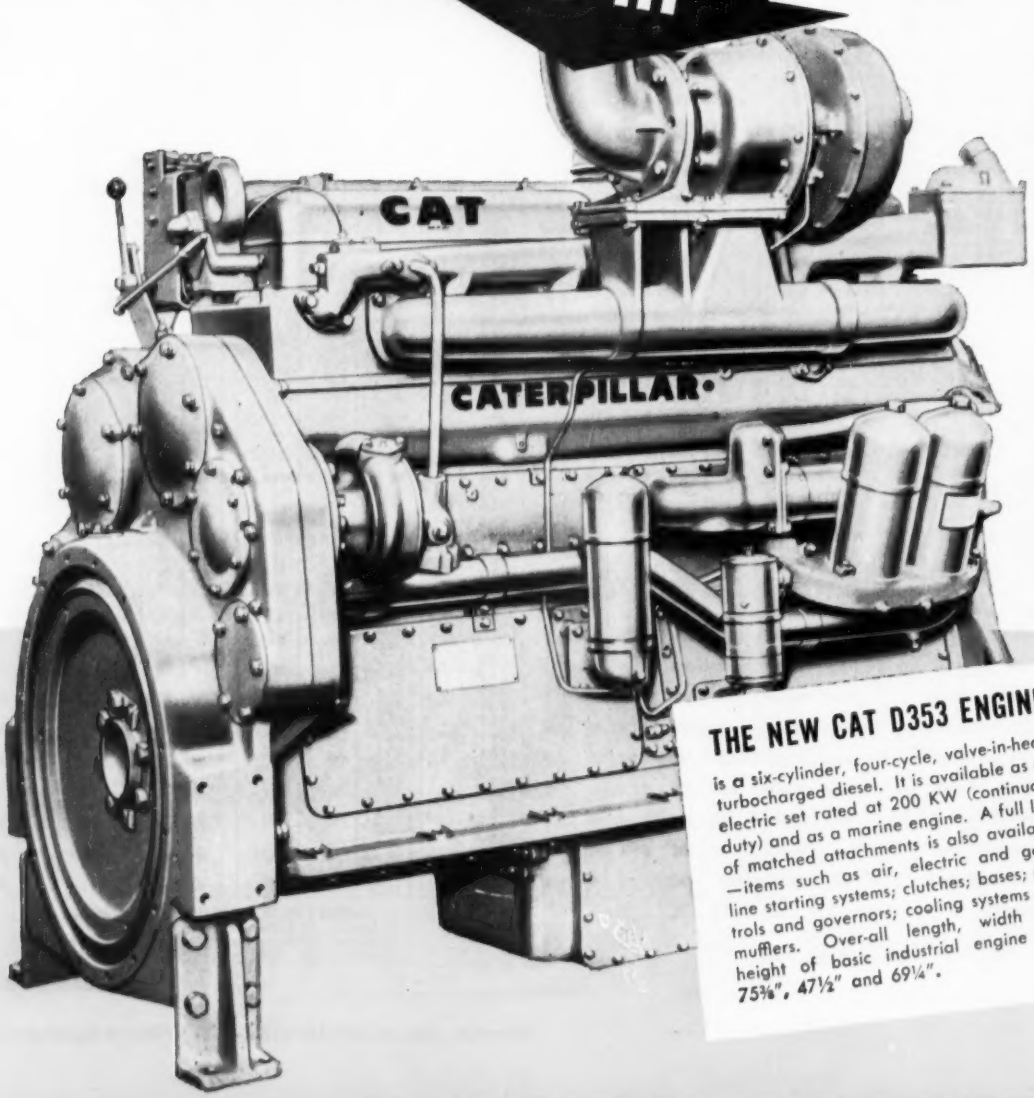
Galion Iron Works & Mfg. Co., Galion, O.
Huber-Warco Co., 202 N. Greenwood St., Marion, O.
Acme Iron Works, 540 Culebra Ave., San Antonio, Tex. (Ingram rollers)
Seaman-Andwall Corp., 305 N. 25th St., Milwaukee 15, Wis.

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Caterpillar announces in the world's most

The engine that delivered outstanding is now available as the D353 Industrial

D397 650 HP† | D375 430 HP† | **New D353 390 HP†** | D342 225 HP† | D339 140 HP†



THE NEW CAT D353 ENGINE

is a six-cylinder, four-cycle, valve-in-head turbocharged diesel. It is available as an electric set rated at 200 KW (continuous duty) and as a marine engine. A full line of matched attachments is also available—items such as air, electric and gasoline starting systems; clutches; bases; controls and governors; cooling systems and mufflers. Over-all length, width and height of basic industrial engine are: 75⅜", 47½" and 69¼".

another heavy-duty engine advanced line of diesels

performance in the famous D9 Tractor Engine, Electric Set and Marine Engine

D337	D326	D318 (SERIES G)	D315 (SERIES G)	D318	D315	D311
310 HP†	200 HP†	175 HP†	115 HP†	137 HP†	91 HP†	65 HP†

†Maximum output capacity

Adding to Caterpillar's line of modern heavy-duty engines, there's now the Turbocharged D353 rated at 390 HP (maximum output capacity). This engine, a prototype of the unit in the mighty D9 Tractor, is job-proved after thousands of hours of operation in the field!

Like all modern CAT* Diesels, the D353 incorporates in its design the advanced features developed by Caterpillar in a quarter century of diesel leadership. Compact and sturdy, it is built for the hard work. Its four-cycle design delivers the long, effective power stroke that puts power to more efficient use than other types of engines. Its turbocharger utilizes waste energy from the engine exhaust to increase over-all efficiency and economy. Its fuel system requires no adjustment. There are no cylinder ports to clean. And its exclusive Caterpillar single-orifice injection valves, combined with the precombustion chambers, permit the use of a wide range of fuels including premium diesel fuels as well as low-cost No. 2 furnace oil *without fouling*. All these and other features add up to performance that no unit in its power class can match.

With the addition of the D353 to the Caterpillar Engine line, you now have a wider choice than ever for your requirements. Engines are available up to 650 HP (maximum output capacity) and electric sets up to 350 KW (continuous duty). Either as original or replacement power, there's one among hundreds of different arrangements that exactly meets your needs. Leading manufacturers of machinery can supply these models in the equipment they build.

For complete information about the new D353 and other Cat Diesels, see your Caterpillar Dealer. Let him show you how diesel leadership based on a quarter century of experience can engineer the modern, heavy-duty diesels of tomorrow.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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Caterpillar "Firsts" in a Quarter Century of Diesel Leadership

- "Hi-Electro" hardened cylinder liners
- Chemically conditioned cylinder liners
- Stainless-steel piston protectors
- Aluminum alloy bearings
- Interchangeable, adjustment-free fuel injection equipment
- Capsule-type injection valves
- Service meters
- Superior lubricants (detergent oils)
- Notarized, certified power

AND MANY MORE!

Certified Power for Cat Diesel Engines

Through the years, Caterpillar Engines have earned a reputation for *honestly rated power*. Now Caterpillar backs this reputation with a *notarized certificate* covering the horsepower capabilities of each engine. Caterpillar is the first and only manufacturer to give you this assurance of capacity. You have a right to demand *certified power* when you invest in an engine. You get it when you buy from your Caterpillar Dealer!

STEEL ROLLERS—1957 *(continued)*

	MAKE AND MODEL		TYPE: Portable, Tandem, 3-Axle Tandem (3 AT), 3-Wheel	WEIGHT, LBS.: On Guide Roll(s), Dry	On Compression Roll, Dry	Total Weight, Dry	On Guide Roll(s), Water Ballast	On Compression Roll Water Ballast	Total, Water Ballast	On Guide Roll(s), Wet Sand Ballast	On Compression Roll, Wet Sand Ballast	Total, Wet Sand Ballast	COMPRESSION LB/LINEAL IN./ROLL FACE: Guide Roll(s), Dry	Compression Roll, Dry	Guide Roll(s), Water Ballast	Compression Roll, Water Ballast	Guide Roll(s) Wet Sand Ballast	Compression Roll, Wet Sand Ballast
57	INGRAM	5-8-ton	Tandem	4,084	6,126	10,210	6,100	10,050	16,150	7,471	12,189	19,660	82	123	122	201	142	213
58		8-10-ton	Tandem	5,500	10,500	16,000	7,350	13,000	20,350	9,825	14,738	24,563	110	210	147	260	225	337
59		8-12-ton	Tandem	6,520	9,780	16,300	10,575	13,460	24,035	12,674	19,011	31,685	120	181	196	249	235	352
60		5-ton	3-Wheel	2,282	5,323	7,605	3,015	7,035	10,050	3,587	8,368	11,955	79	130	99	172	104	226
61		6-ton	3-Wheel	3,320	5,580	8,900	4,402	7,498	11,900	5,960	8,940	14,900	92	155	122	208	166	248
62		8-ton	3-Wheel	4,862	7,293	12,155	6,234	9,351	15,585	6,866	10,299	17,165	122	203	156	260	172	286
63		10-ton	3-Wheel	5,896	10,080	15,976	7,392	12,640	20,037	8,943	15,227	24,170	134	252	168	315	203	381
64		12-ton	3-Wheel	6,248	14,080	20,328	7,084	17,280	24,364	11,365	17,047	28,412	168	316	201	378	258	426
65	SEAMAN-ANDWALL	500	Tandem	4,560	6,840	11,400	6,610	10,220	16,830	8,270	12,960	21,230	91	136	132	210	165	260
66		800	Tandem	6,880	10,320	17,200	9,880	14,900	24,780	12,430	18,740	31,170	127	192	183	278	230	347

PNEUMATIC-TIRED ROLLERS—1957

	MAKE AND MODEL		WEIGHT, LBS.: Empty	With Water Ballast	With Wet Sand Ballast	Max. Weight Per Wheel	Water Ballast Capacity, Gal.	Sand Ballast Capacity, Cu. Ft.	COMPACTION*: Empty	With Water Ballast	With Wet Sand Ballast	WHEELS: Total Rolling Width, In.	No. of Wheels, Front	No. of Wheels, Rear	Amount of Tire Overlap, In.	Tire Size, Standard	Tire Ply, Standard	Recommended Min. Tire Pressure, Psi	Recommended Max. Tire Pressure, Psi	Tire Ply, Optional
1	BROS	SP-54	6,600	13,850	18,000	2,000	868	116	97	204	265	68	5	4	1/2	7.50-15	4	25	34	6
2	BROWNING	SPR-9	6,550	–	18,900	2,860	150	100	NA	–	357	68	5	4	1/2	7.50-15	4	35	55	6
3		SPR-4	8,400	–	20,750	2,825	150	100	NA	–	255[c] / 357	60	(c)	4	1/2	7.50-15	4	35	55	6
4	CHESTER	9W-PD	6,600	12,200	18,000	2,000	675	90	100	188	274	66	4	5	3/4	7.50-15	4	24	34	6
5	FERGUSON	SP-10	7,170	–	21,470	2,385	–	110	106	–	315	68	4	5	1	7.50-15	4	34	50	6
6		SP-12	8,270	–	24,800	2,255	–	147	100	–	300	83	5	6	1	7.50-15	4	34	50	6
7		2511	16,050	–	50,000	4,545	–	283	166	–	520	96	5	6	1	9.00-20	10	60	90	–
8	W. E. GRACE	11M	6,400	–	22,000	2,000	–	85	74	–	259	85	5	6	1/2	7.50-15	4	28	32	6
9	ROSCO	SR-9-O	6,600	12,000	18,000	2,000	1,412	90	96	174	260	69	4	5	3/8	7.50-15	4	25	25	6
10		SR-9-T	6,800	13,500	18,800	2,860	1,590	110	99	196	270	69	5	4	3/8	7.50-15	4	35	35	6
11	SEAMAN-ANDWALL	5620	15,000	31,000	44,200	2,600	1,915	234	107	221	315	96 1/4	8	9	3 1/4	7.50-15	6	(g)	55	4
12	SEAMAN-GUNNISON	619	12,000	18,000	32,500	3,200[i]	660	150	S-0 to 425[i] / R-100 to 400			R-86 / S-72	2	8	–	F-13.-24 / R-7.5-15	12 / 6	30 / 50	35 / 55	–
13		619D	14,000	20,000	34,500	3,200[i]	660	150	S-0 to 425[i] / R-100 to 400			R-86 / S-72	2	8	–	F-15-26 / R-7.5-15	10 / 6	20 / 50	25 / 55	–
14	SOUTHWEST	VP-9G	6,900	13,800	18,000	2,000	825	110	100	200	261	69	4	5	1	7.50-15	4	25	35	6
15		VP-11G	7,800	15,300	22,000	2,000	900	120	93	182	262	84	5	6	1	7.50-15	4	25	35	6
16	TAMPO	SP-9S	6,200	12,340	16,100	2,000	750	100	85	172	250	72	4	5	1/2	7.50-15	4	20	35	6
17		SP-11S	8,200	15,700	22,600	2,040	900	120	93	178	257	88	5	6	1/2	7.50-15	6	20	55	–

* Lbs. per lineal inch of rolling width.
(a) Also available with Cont. F-162 gasoline engine and friction clutch (SP-54M). Also available with Cont. diesel engine.
(b) Also available with Cont. F-162 gasoline engine ($5,075).
(c) SPR-4 has two 34 x 30-in. steel rolls on front.
(d) Also available with Oliver S-77 gasoline engine and Oliver S-66 and S-77 diesel engines.
(e) Also available with Minneapolis-Moline UTIL-D diesel engine ($11,150).
(f) Available with diesel engine.
(g) Variable (torque converter).
(h) Also available with Cont. HD-260 diesel engine ($10,950).
(i) Seaman-Gunnison Duo-Pactors combine pneumatic-tired and steel-roll compaction. First passes are made with pneumatic rolls and steel roll is lowered to surface to compact ridges between tire ruts. Other Duo-Pactor attachments include tandem rubber-tired rolls, vibrating unit, and sheepsfoot tampers that replace prime mover's drive wheels. In listing, "S" means steel roll, "R" means rubber-tired roll.
(k) Torque amplifier.
(l) Torque converter available.
NA Specification not available from the manufacturer.

Specs for Your Files...

ROLL DIMENSIONS, IN.							POWER TRAIN														DIMENSIONS, OVERALL, IN.						PRICE	
							ENGINE							TRANSMISSION														
Overall Rolling Width	Guide Roll, No. of Sections	Guide Roll, Dia. x Width, (Total All Sections)	Guide Roll, Thickness	Compressor Roll, Dia. x Width	Compression Roll Thickness	Make **	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	No. of Cycles	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range, Forward Speeds	No. of Reverse Speeds	Range, Reverse Speeds, MPH	Clutch, Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning	FOB, Factory, Standard Model	
50	2	40x50	3/4	52x50	3/4	Herc.	GO-260	G‡	90	2400	6	4	NA	4	1-6	4	1-6	TC	Hyd	173	56	76	124	14	NA	$6,800	57
50	2	40x50	3/4	52x50	3/4	Herc.	GO-260	G‡	90	2400	6	4	NA	4	1-6	4	1-6	TC	Hyd	173	56	76	124	14	NA	7,400	58
54	2	48x54	7/8	60x54	1	Herc.	GO-298	G‡	105	2400	6	4	NA	4	1-6	4	1-6	TC	Hyd	201	61	88	144	16	NA	8,400	59
66	2	32x34	3/4	46x18	3/4	IHC	U123	G	33	2000	4	4	NA	2	.25-8	1	.25-4	Fric.	Hyd	145	65	67	87	12	180	5,200	60
68	2	36x36	3/4	48x18	3/4	IHC	U175	G	50	2000	4	4	NA	5	.25-8	5	.25-8	TC	Hyd	169	69	60	101	13	192	6,900	61
71 1/2	2	38x40	1	55x18[c]	1	Herc.	GO-260	G‡	90	2400	6	4	NA	5	.25-10	5	.25-10	TC	Hyd	177	72	66	110	16	NA	8,000	62
78	2	42x44	1	60x20[b,c]	1	Herc.	GO-260	G‡	90	2400	6	4	NA	5	.25-10	5	.25-10	TC	Hyd	194	78	75	125	16	NA	8,800	63
77	2	44x44	1	69x20[b,c]	1	Herc.	GO-298	G‡	105	2400	6	4	NA	5	.25-6	5	.25-6	TC	Hyd	210	77	79	137	20	216	9,605	64
50	2	40x50	3/4	54x50	1	Cont.	FA-226	G‡	73	2400	6	4	20	4	1.5-5.5	4	1.5-5.5	TC	Hyd	156	60	88	114	17	228	6,795	65
54	2	48x54	1	60x54	1 1/4	Cont.	FA-226	G‡	73	2400	6	4	20	4	1.5-5.5	4	1.5-5.5	TC	Hyd	172	64	90	124	18	248	7,995	66

POWER TRAIN														DIMENSIONS, OVERALL, IN						PRICE	
Make	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	Displacement, Cu. In.	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range of Forward Speeds, MPH	No. of Reverse Speeds	Range of Reverse Speeds, MPH	Clutch, Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning Radius	FOB, Factory, Standard Model	
Cont.[a]	F-226	G	50	2,000	6	226	40	3	0-20	3	0-20	TC[a]	Hyd	151.3	69	92	120	11	221	NA	1
Cont.[b]	F-244	G	64	1,800	6	244	15	4	2-13	4	2-13	TC	Hyd	178	69	74	116	9 1/2	234	$5,950	2
Cont.	F-244	G	64	1,800	6	244	15	4	2-13	4	2-13	TC	Hyd	177.5	69	74	116	9 1/2	234	6,520	3
Oliver[d]	S-66	G	38	2,000	4	144	17	5	1.8-9.5	2	1.8-2.7	Fric.[f]	Hyd	136	66	84	115	15	180	5,585	4
Oliver	S-66	G	37	2,000	4	144	15	6	2.5-4.5	2	2.5-4.5	Fric.	Hyd	150	68	90	120	10 1/2	180	4,980	5
Oliver	S-77	G	52	2,000	6	216	15	8	2.5-4.5	8	2.5-4.5	TC	Hyd	154	83	91	124	10	216	6,385	6
M-M	Util.[e]	G	57	1,300	4	283.7	21	6	2-14.5	6	2-14.5	Fric.	Hyd	172	96	87	136	11	276	10,050	7
Cont.	F-226	G	50	1,800	6	226	20	5	2.5-13	5	2.5-13	Fric.	Hyd	162	88	72	90	13	192	NA	8
Oliver[f]	66	G	38	2,000	4	144	13	5	1.9-5.6	2	2.5-4.5	Fric.	Hyd	154	69	92	124	10	180	4,985	9
Ford[f]	223	G	78	2,000	6	223	34	(g)	0-15	(g)	0-15	TC	Hyd	147	70	93	119	10	200	6,250	10
Cont.[h]	FA-226	G	75	2,600	6	226	40	6	1-20	2	2-9	TC	Hyd	211	90	71	132	11	252	9,950	11
IHC	350	G	50	2,000	4	175	111	10	1.8-16.7	2	2.2-3.2	TA[k]	Hyd	279	86	76	136	10	157	8,750	12
IHC	W-450	D	65	1,450	4	281	120	10	1.6-17	2	2.2-3.2	TA[k]	Hyd	309	86	78	162	10	185	NA	13
Cont.[f]	F-162	G	40	2,000	4	162	10	4	0-15	4	0-15	TC	Hyd	157	77	78	127	10	222	NA	14
Cont.[f]	F-226	G	50	2,000	6	226	10	4	0-15	4	0-15	TC	Hyd	160	92	78	130	10	246	NA	15
Oliver[f]	S-66	G	38	2,000	4	144	10	5	2.5-12	2	2.5-4.5	Fric.[f]	Hyd	154	72	88	124	10	240	4,940	16
Oliver[f]	S-88	G	65	2,200	6	265	20	6	3-22	6	3-13	TC	Hyd	155	88	92	127	10	240	7,290	17

Wm. Bros. Boiler & Mfg. Co., 1057 10th Ave., S.E., Minneapolis, Minn.
Browning Mfg. Co., 111 Humble Ave., San Antonio, Texas.
Chester Products Co., Div. of Ransohoff, Inc., N. 5th St. & Ford Blvd., Hamilton, O.
Shovel Supply Co., 4900 Hines Blvd., Dallas, Texas (Ferguson rollers)
W. E. Grace Mfg. Co., 6000 S. Lamar St., Dallas, Texas.
Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn.
Seaman-Andwall Corp., 305 N. 25th St., Milwaukee 15, Wis.
Seaman-Gunnison Corp., 2763 S. 27th St., Milwaukee 15, Wis.
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Step in... NEW '58







NEW TILT CAB TRUCKS . . . lowest-priced* Tilt Cab line in America! Six new series, up to 60,000-lb. GCW, are typical of the wide choice in Ford's heavy duty line.

**Based on a comparison of manufacturers' suggested retail prices*

(Background) **NEW TWO-TON** stake with your choice of Short Stroke Six or V-8's.

NEW '58 FORD PICKUP. Modern Styleside body is as wide as the cab and *standard at no extra cost!*

Step ahead... with all

Meet America's newest, most modern trucks—Ford for '58! Discover the new advances in this pace-setting line. See the important advantages that help you do your job better and at lower cost!

Then match your specific requirements against Ford's over 300 new models. Whatever your need—from half-ton pickup to heavy duty tandem—Ford's got it! And *you'll* get a truck that costs you less to own, less to run and lasts longer, too.

So see your Ford Dealer today and step ahead with America's most modern truck—built modern to cost you less.

NEW CAPACITY! Extra-wide Styleside pickup bodies have up to 41% more loadspace than others . . . *biggest loadspace per dollar!*

NEW SAVINGS! Only Ford offers this modern, extra-capacity pickup body *at no extra cost!*

NEW EASY RIDE! Scientific Impact-O-Graph ride tests prove amazing superiority of Ford over competitive pickups—a ride mighty close to that of a car!

NEW POWER! More powerful, more rugged V-8 engines! And only Ford offers Short Stroke economy in *both* Six and V-8!

'58 FORD TRUCKS—FIRST WITH THE FEATURES THAT COUNT!

FORD TRUCKS



that's new...costs less, too!

NEW SAFETY! "Safety Vision" dual headlights . . . Lifeguard steering wheel . . . double-grip door locks, standard equipment on Ford trucks!

NEW "FINE CAR" CONVENIENCES! Ranchero offers all power assists, including power windows. You can even get factory-installed air conditioning at Ford's low prices.

NEW COMFORT! Only Ford truck Driverized Cabs have this comfort combination: woven plastic upholstery, non-sag seat springing, suspended pedals and weather-protected inboard steps.

NEW TILT CAB SAVING! Hundreds of dollars less than other Tilt Cabs . . . America's lowest-priced* Tilt Cab line.

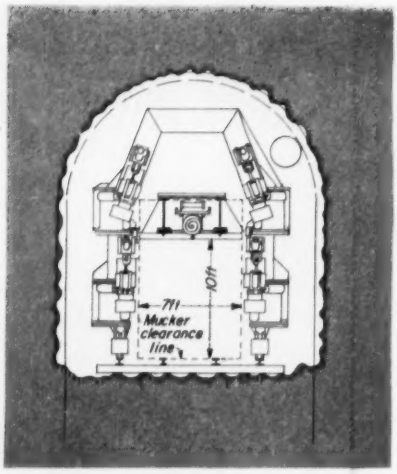
The big fleets buy more Ford Trucks than any other make!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!



ASSEMBLING THE RIG—While workmen (foreground) install 20-in. exhaust pipe, workmen (rear) tighten up connections for cherry picker used in grasshopper loading of cars.



Hydraulic

"IT WON'T WORK!" Skepticism was written all over the faces of the seasoned tunnel stiffs who saw the pile of hydraulic equipment arrive at the shaft for the $12-million tunnel 28,700 ft long that will form part of the Chicago Central District Filtration plant.

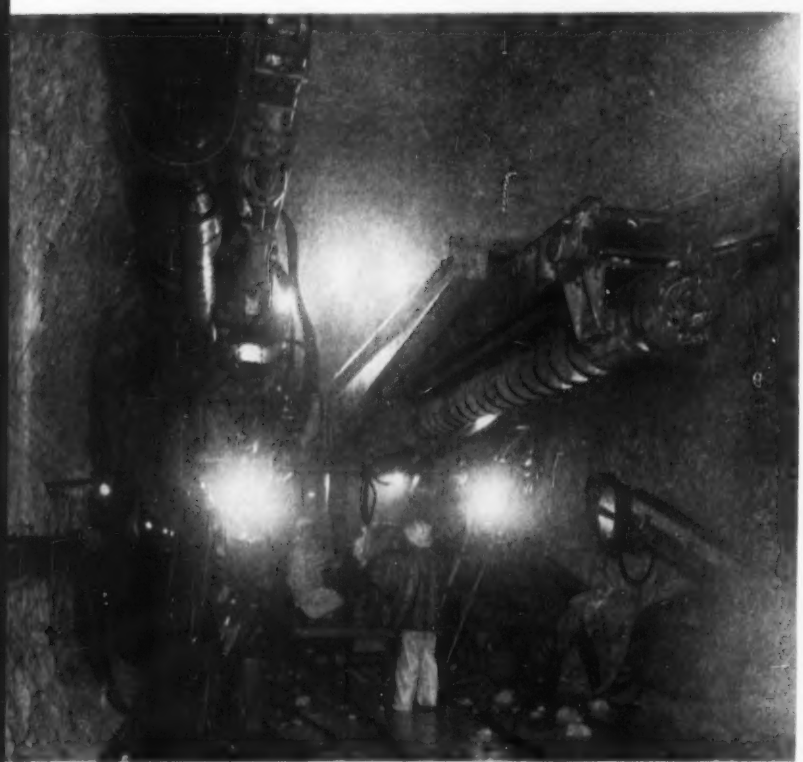
Why the concern? The mass of drills, structural steel, and hydraulic pumps (representing $250,000 in drilling gear) would be tried in a rock tunnel for the first time.

The equipment promised a lot. It promised to cut drilling time through rock in half; to reduce the hazards of drilling; to cut down on labor; and to speed up mucking operations. But it had never been used on rock before. And that's what bothered the men.

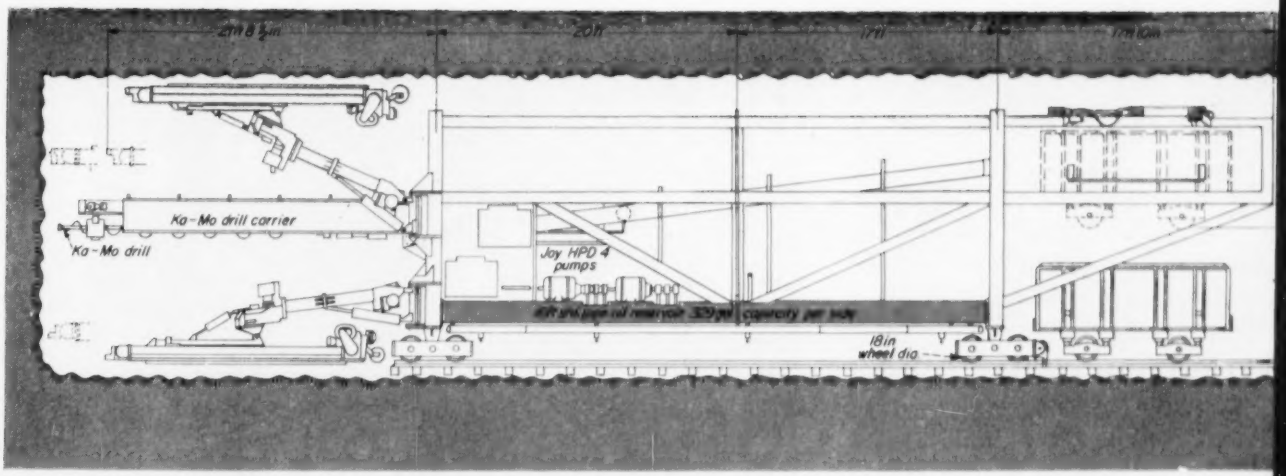
Seasoned tunnel men on the job didn't like being cast in pioneer roles. Tunneling with tried and true methods was hazardous enough. None of them wanted to fool with the new contraption.

Look For Young Men

Grafe - Tecon - Mittry - Drake, joint venture contractors on the job, wanted no part of trying to get the tunnel drilled with a reluctant crew. So the contractors searched the field for young men (most of whom had experience only in sewers or small tunnels) and put them to work learning the operation of the new tools.



READY TO WORK—Tunnel stiffs put finishing touches to assembled jumbo and drills. Space under burn cut drill allows for in and out passage of muck cars through jumbo.



THIS IS THE RIG—Front and side views show the new type hydraulic machine and how it sits in tunnel.

Rotary Drills Bore Rock Tunnel

Basically, the equipment produced by Joy Manufacturing Co., consists of a self-propelled jumbo with a cherry-picker crane attachment mounted at its rear and five hydraulic rotary drills. Four of these drill 1⅝-in. holes; one drills a 14-in. dia burn cut. Drill steels are a full 11 ft in length. Bits are rotary-type fish-tails.

Drills, carriers, and booms are suspended from a swivel clamp fastened to the front of the jumbo. The four small-bore drills, mounted on the corners of the jumbo, can be moved 360-deg by hydraulically operated booms.

The fifth (Ka-Mo) drill and carrier is mounted at the center of the jumbo face 10 ft over the tunnel floor. A screw conveyor fitted inside the carrier moves the grindings back into the jumbo where they are dropped onto the tunnel floor.

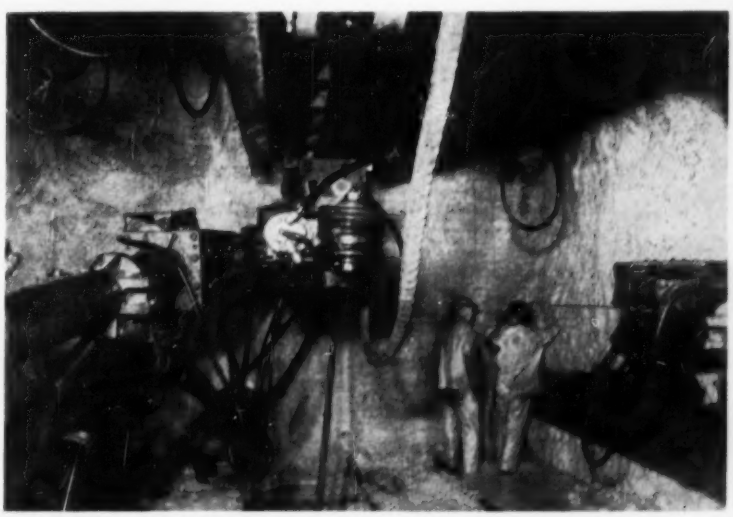
The jumbo is a masterpiece of efficient design. Besides being a mount for the drills, it serves: (1) As reaction for the rotary drills that need the weight of the jumbo; (2) As carrier for huge oil reservoirs needed for the hydraulic drilling; (3) As structural frame under which muck cars and equipment can pass; (4) as a cherry picker that lifts muck cars up into the jumbo framework to permit grasshopper loading and movement of muck cars.

Drills and jumbo measure 76½ ft overall. The jumbo itself is 54 ft long and 10½ ft wide. It consists basically of a structural steel framework set on railroad wheels that ride tracks on the tunnel floor 9 ft 3 in. apart. Two 329-gal oil reservoirs 37 ft long and 16-in. in dia store oil for the drills and booms. Electric motors run four Joy HPD-4 pumps each of which can deliver 1,200 lb pressure. A cherry-picker crane is mounted on top the jumbo's rear.

Controls for drills, cherry picker, and jumbo are mounted on the jumbo sides. One man on each side operates two drills. This is how it works.

The jumbo first is moved up into position against the tunnel face, which measures 17x19 ft. The 14-in. drill starts boring out the burn cut while the four smaller drifters grind through the limestone at a rate of 6 ft per min. While the Ka-Mo bores relatively slowly, the drifters continue to bore out holes until the full 64-hole pattern is completed. The entire pattern is bored out in the time it takes the Ka-Mo to make the burn cut.

Once drilling has been completed, the jumbo is moved back



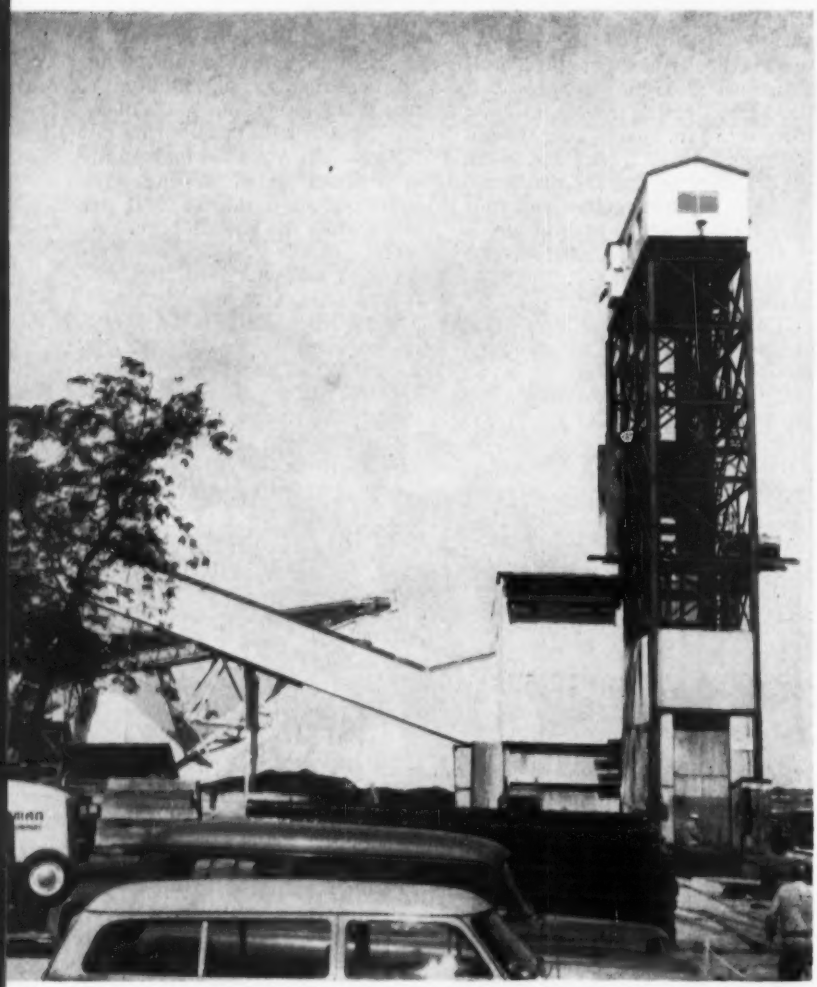
DRILLING SHOT HOLES — While huge 14-in. Ka-Mo carves out center burn cut, smaller 1⅝-in. rotary drills bore out 11-ft shot holes at a rate of 6 ft per minute.



READY TO TURN—Rotary car dump waits entrance of muck train from tunnel heading.



DUMPING MUCK—Rotary car dump proves fast means of unloading fractured rock. Muck car locks in rotary which turns and unloads muck into tower muck bucket.



ROCK TO AGGREGATE—Contractors Grafe-Tecon-Mittry-Drake made a rock disposal deal with an aggregate supplier who set up a commercial rock crushing plant at site.

50 ft and loading begins. The contractor uses 3½ to 4 lb of Atlas 40% Gel powder for each yard of rock pulled. Atlas blasting caps then detonate the shot in eight millisecond delays to pull 10½ ft of finely fractured rock.

Powder smoke and dust are sucked out through a 2-ft dia exhaust pipe, and mucking begins. First, a Conway 100-1 mucker fitted with a conveyor moves in under the jumbo arch and starts shoveling rock.

Muck Train Rolls

The muck train then moves in under the jumbo. A Goodman or Greensburg electric locomotive pulling a train of six 10-yd box-type muck cars stops when the last car on the train is under the cherry picker. The last car is picked up and held in the air while the train moves back. This car then is lowered onto the tracks in front of the locomotive, which pushes it up behind the mucker.

Meanwhile, the fifth car in the train is lifted by the cherry picker. When the first car is loaded, the locomotive pulls back behind the fifth car. The fifth car is lowered in front of the loaded first car and again the train moves an empty car up to the mucker. This procedure continues until all six cars are loaded. The train then moves out to the shaft. Switch tracks every 3,000 ft permit passing of trains in the tunnel.

continued on page 110

On Yazoo River Basin Project, Yazoo County, Miss.

PIONEER GETS HIGH PRODUCTION FROM CAT* LOWBOWL SCRAPERS



DW20-NO. 456 LOWBOWL SCRAPER is push-loaded by a giant D9 Tractor. LOWBOWL design loads more material with less resistance clear to the end of the loading cycle for quicker heaped loads.



DW21-NO. 470 LOWBOWL SCRAPER speeds heaped load on haul. Turbocharged 6-cylinder Cat Engine, also in the DW20, delivers 300 HP (maximum output)—power aplenty for working in tough conditions.

At the time these pictures were taken, Pioneer Contracting Co., Inc., Memphis, had completed 100 working days of a schedule calling for 600. The project, involving 2,045,000 cu. yd. of earthmoving on the Yazoo River Basin, covers some 7 miles of work on channels, levees, drainage ditches and road relocation. There's a fleet of Caterpillar-built units on the job, including two DW20-No. 456 LOWBOWL Scrapers, a DW21-No. 470 LOWBOWL Scraper and a giant D9. They work 24 hours a day, 5 days a week. Says Pioneer's Scraper Foreman R. C. Parker: "We prefer Caterpillar-built equipment because of ease of operation. You can also depend on them for a minimum of down time. And wherever we are, Caterpillar Dealer service is always available."

Reports from job after job show that, under identical job conditions, Cat LOWBOWL Scrapers get bigger loads faster than competitive units. Both the four-wheel DW20-No. 456 and the two-wheel DW21-No. 470 have capacities of 18 cu. yd. struck and 25 cu. yd. heaped. Their LOWBOWL design loads more material with less resistance clear to the end of the loading cycle for quicker heaped loads. And the Turbocharged 6-cylinder Caterpillar Engine delivers 300 HP (maximum output) for fast loading, hauling against adverse grades and dumping in tough going.

Whether you're a two-wheel or a four-wheel man, you can count on profitable production from LOWBOWL Scrapers. Your Caterpillar Dealer will be glad to show you competitive production facts and figures from actual jobs. Better still, name the date—he'll demonstrate on your job.

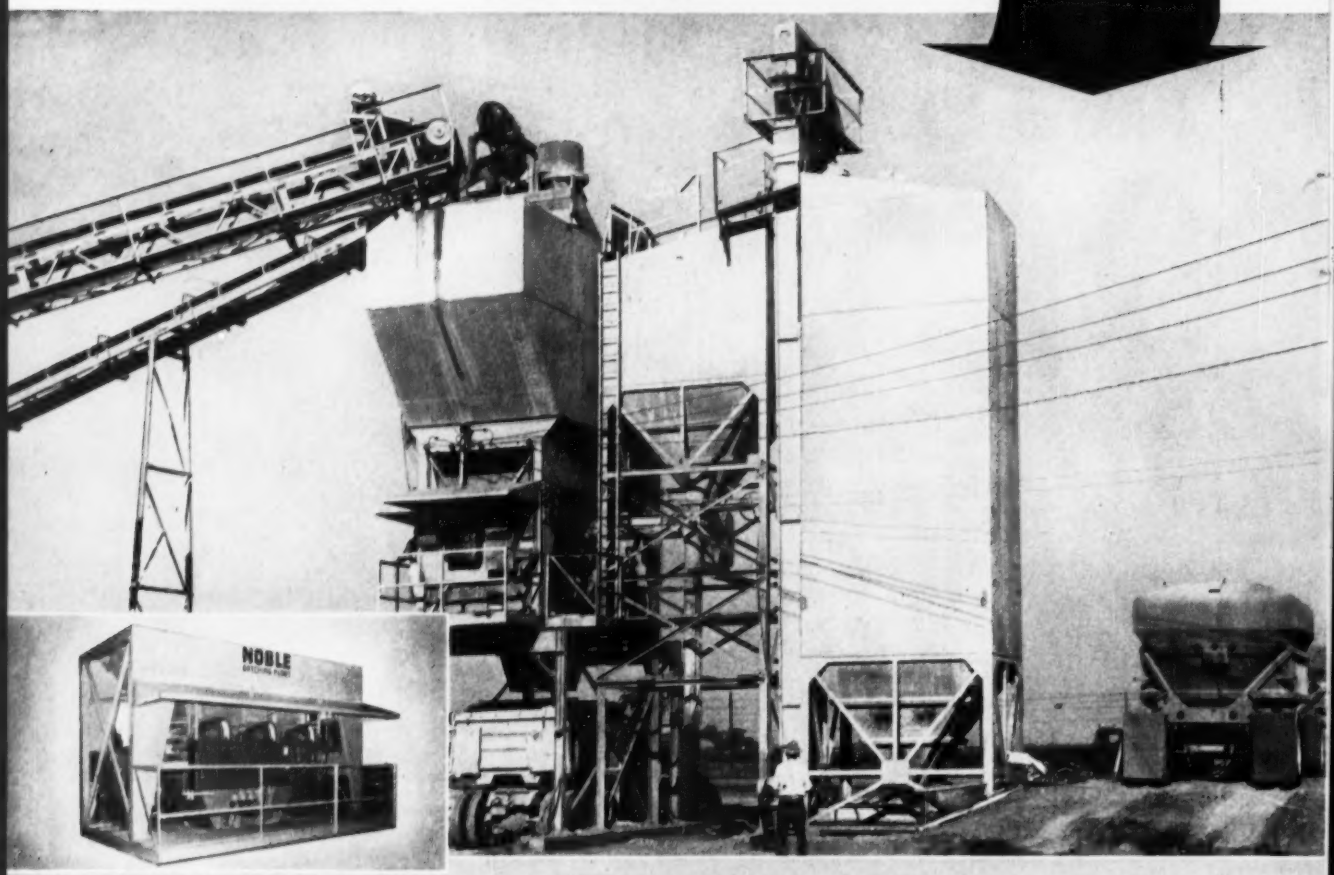
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**WANTED—
THE HARD WORK**

NOBLE TRIPLE BATCHER produces one operator in 1 stop or



Bin center section can be truck-hauled without removing weigh hoppers, operator controls or any other components. All electrical switches are mounted in this unit and connections are made by simple twist-lock couplings.



3 pen recorder, optional equipment, produces record of each material as required by Corps of Engineers specifications. Adaptable to 1 or 2 stop set-up.

✓ Weighs 3 materials for a single batch at one time! *(sand, coarse aggregates, cement)*

✓ Batches accurately to rigid specifications!

✓ Supplies 2 or 3 dual drum pavers!

Lowest erection costs. Noble comes completely equipped ready for batching. Factory assembled sections, all within legal width for highway transport, are quickly erected on timbers or concrete.

NOBLE CONCRETE BATCHING PLANTS

WRITE FOR CIRCULAR

THE NOBLE COMPANY • 1860-7TH ST., OAKLAND 20, CALIF. • TEMPLEBAR 2-5785
Branches: 20950 Center Ridge Road, Cleveland 16, Ohio. EDison 1-3426
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Export Distributor: Frazar International Corp., San Francisco

over 300 yards per hour with 2 stop set-up

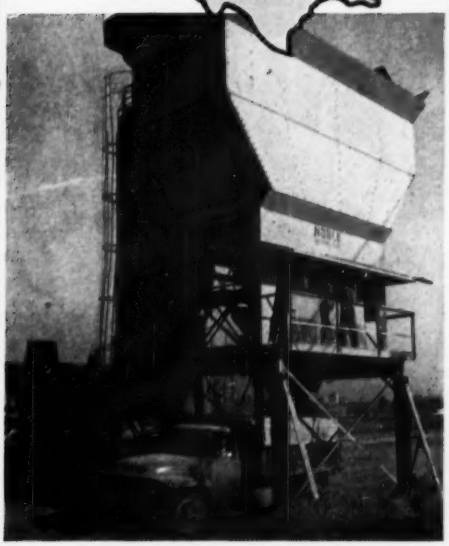


PORTABLE!
LARGEST COMPONENT
MEASURES 8' x 10'6" x 36'

FROM COAST TO COAST

Left—Supplying 3 pavers on California air base construction. Produced 3500 cubic yards in 10 hour period. 36" coarse aggregate conveyor, 24" sand conveyor. Cement silo has facilities for direct loading of cement spreader trucks.

Below—On New England paving job.



For short stretch paving, come back work, tunnels, bridges, use...

NOBLE-MOBILE Batching Plant on Wheels



Convair Aircraft taxiways



Bureau of Reclamation siphon, Othello, Wash.



Ohio highway paving

Batches at the job site where hauls are shorter and profits longer. 100% complete plant. 65 to 125 yards per hour. Scooploader, crane or conveyor loaded. Supplies transit mix, dry batch or premix.

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UP FOR CHARGE—Battery powered locomotive that pulls muck cars comes up to be recharged in battery and maintenance shop outside of tunnel shaft. Contractors use two kinds of locomotives, Goodman and Greensburg. Each handles train of six cars.

A rotary car dump at the 235-ft deep elevator shaft locks the cars one by one in the dumper which rotates to dump a car load of muck into a muck bucket that in turn carries the rock to the surface.

The contractor entered into a muck disposal deal with a local aggregate supplier. The supplier, Material Service Corp., takes over the rock at no cost to the contractor from the shaft tower. Rock is dumped into a chute that leads to the supplier's rock crushing plant alongside the shaft.

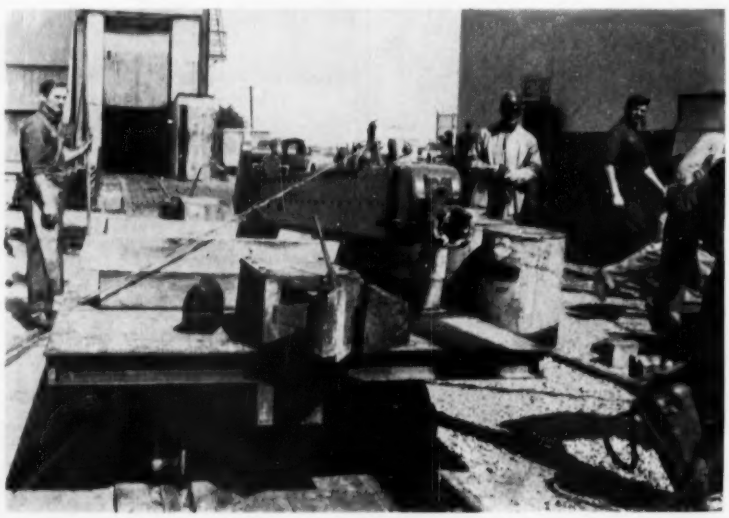
The equipment at first caused the contractor a lot of trouble. Heading advance on some days did not exceed 20 ft. Controls had to be shifted. The cherry-picker had to be adjusted. Different bits had to be tried. But then the pioneering began to pay off.

Daily heading progress began to increase to 30 ft a day, then 40, then 50. Now a crew of 19 men—five of them operating the equipment—make a daily advance of 60 ft on each of two headings.

Advantages? Speedy mucking and increased shooting permit a full drill, shoot, muck cycle every five hours. The equipment bores full 11-ft holes using a single steel. Drilling operations are quiet as compared to pneumatic drilling. Labor is reduced. In all, an important addition has been made to rock tunnel construction.

Top men on the job are Fred Brandt, project manager; Ray Blasingame, general superintendent; Merl Miller, superintendent; and Ted Kales, job engineer.

The joint venture partners include Grafe-Callahan Construction Co., Los Angeles, Calif.; Tecon Corp., Dallas, Tex.; Mittry Constructors, Los Angeles, Calif.; and Johnson, Drake & Piper, Inc., Minneapolis, Minn.



REPLACING A DRILL CARRIER—Carrier will be sent down into tunnel to replace one that had been damaged during a shot. It will contain a single 110-ft steel for rotary drilling.

ENGINEER'S FIELD REPORT

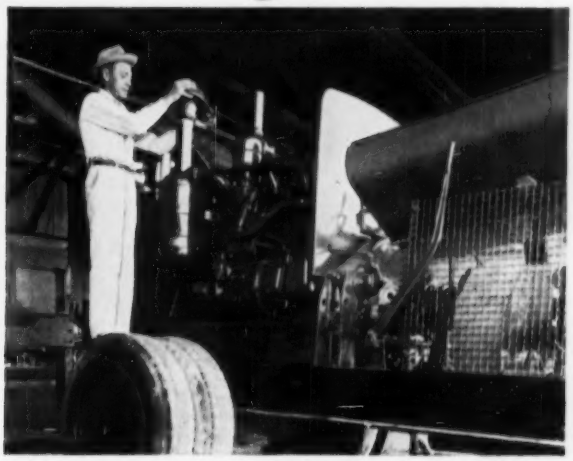
PRODUCT RPM DELO OIL

FIRM M. M. SUNDT CONSTRUCTION CO. Tucson, Arizona

RPM DELO OIL ends 5 years of engine troubles



The pan has never been off the Caterpillar D7 engine of this Link-Belt Speeder shovel in 7 years, using RPM DELO Oil. Only repair was a single valve job—no other parts replaced. William Naumann, Sundt's Operations Manager, says, "We tried nine different major brands of oil in five years, trying to lick the frequent breakdowns that slowed our operations. Sometimes, main and rod bearings even froze solid on the crankshaft. We changed to RPM DELO Oil seven years ago, and, since then, have never had any engine troubles due to oil failure. We now use RPM DELO Oil exclusively in our 22 heavy-duty engines."



Lubricated with RPM DELO Oil, this Caterpillar D 13000 portable unit powered a rock crusher of M. M. Sundt Construction Co. for a total of 8976 hours before overhaul. "In spite of extremely dusty conditions the only time the engine was touched was to replace a head—no other repairs were necessary," reports master mechanic Billy Gray, shown replacing air cleaner on unit following overhaul.



Austin 101 rock crusher, powered by Caterpillar unit described above, works 20 hours a day at firm's materials stockpile outside Tucson. Company works year around on road paving, grading, foundations, building construction.

Why RPM DELO Oils reduce wear —prolong engine life



● Oil stays on engine parts—hot or cold, running or idle ● Anti-oxidant resists lacquer formation ● Detergent keeps parts clean ● Special compounds prevent corrosion of bearings ● Inhibitor resists crankcase foaming

LUBRICATING OILS RPM DELO

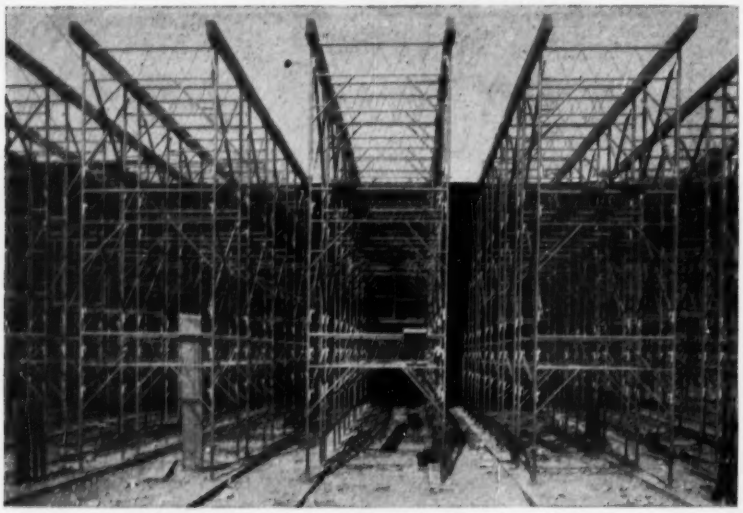
For More Information on this product contact your Standard Engineer or Representative, or write Standard Oil Company of California, 225 Bush Street, San Francisco 20, California

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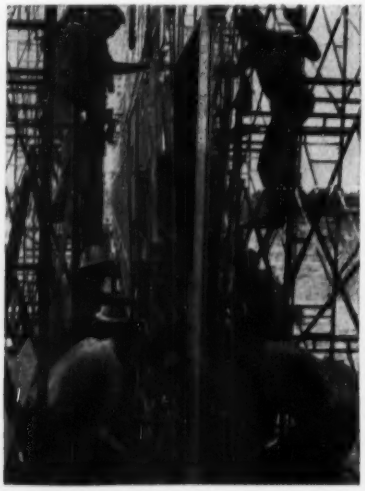
Scaffolding Methods . . . by Patent Scaffolding Co.



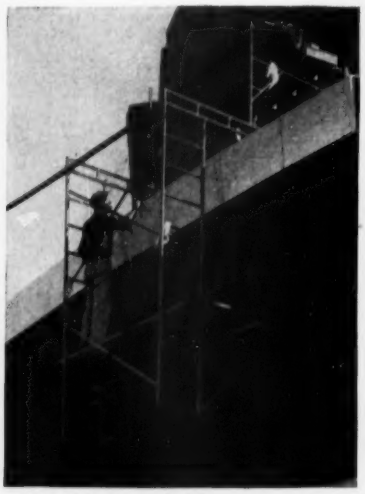
PREFAB SHORING FOR 12" SLAB—On a new 150' x 350', two-story building for Polaroid Corp., Waltham, Mass., general contractor Aberthaw Const. Co. needed support for a 12" slab. 4000 "Trouble Saver"® Shoring frames assembled in rows 3' and 3'6" apart easily provided for it. Job supt., Al Parsons, Jr.. says "We found these shoring frames, braces and components very easy to handle. We know that this type of shoring goes up faster, cuts costs and gives us maximum access to the base slab for other work".



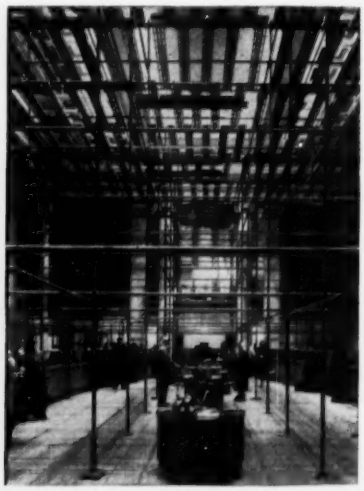
DOUBLE-DUTY—Both the wheeling ramp and the mason's platform in back are made from prefab sections of "Trouble Saver Scaffolding. Varying-height frames and adjustable legs achieve the slope. Terminal Construction Co., Woodridge, N. J., general contractor.



GLASS SETTING RIG—A special rig, developed by Pittsburgh Plate Glass Co., with 700 "Trouble Saver" Scaffolding frames for working platforms, places 8' x 11' glass panes for Conn. Gen. Life Ins. Co. new building, Hartford. Eight rubber cups grip panes, overhead crane lifts to position. Turner Construction Co., general contractor.



ROLLING SCAFFOLD—Unusual set-up is made of two 5'-wide, counter-weighed "Trouble Saver" Scaffolding frames on casters. 12'-trusses are attached and ladder frames hang below. Sidewall brackets make two-level platforms. Scaffold rolls around roof perimeter of new Dallas Memorial Auditorium. R. P. Farnsworth & Co., gen. contr.



BANKING AS USUAL—Smoke damage due to fire made a wash and paint job necessary at the Marshall and Isley Bank, Milwaukee. Painting contractor, Carl L. Ruhland, used "TubeLox"® Scaffolding with Featherweight Stages to provide working platforms for ceiling and high wall work above and to permit banking traffic as usual below.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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GOLD MEDAL SCAFFOLDING

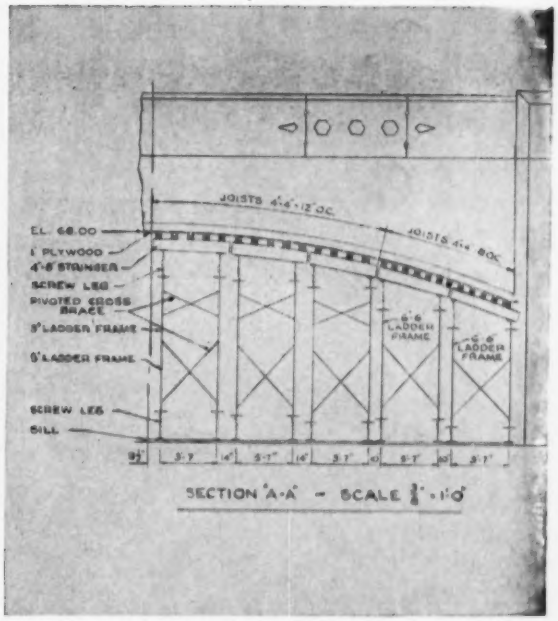
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SIMPLE BRIDGE SHORING — Light-weight, easily-erected, prefab sections of "Trouble Saver" Steel Shoring eliminate heavy timbers (and cranes to handle them) for contractor, Matthew J. Reiser, Inc., on this job. 146 2'-wide ladder frames, 105 5'-wide frames and 196 14" U-heads provide ample support with minimum equipment for overpass on an exit road from the Wilbur Cross Parkway, Wethersfield, Conn.

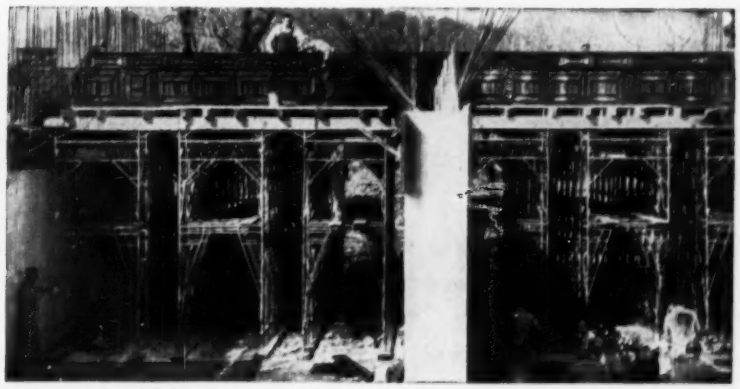


PS Co. ENGINEERED LAYOUTS—Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell or rent* "Gold Medal"® Scaffolds. See classified 'phone directory for your local source. Included are recommendations for joists, stringers, and every component to provide the safest, most efficient and economical shoring.

Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.



DUAL PURPOSE — Here, "Trouble Saver" Scaffolding speeds erection of form-work for above-ground pier shells and supports platform for vibrating machines and workers on a New York State Thruway overpass.



CUTS SHORING COSTS 25%—Mal-Bros Co., contractor on this street relocation bridge in Scotch Plains, N. J., formerly used only wood shoring methods. On this project "Trouble Saver" Steel Shoring was used. 272 frames, quickly assembled in 3' by 5' towers and in rows spaced 2'6" apart, provide faster, easier shoring for the job. The contractor reports savings of 25%.

Get full details on cost-cutting ways to use steel shoring and scaffolding in Highway work

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A tale of two road



CONTRACTOR: E. M. Duesenberg, Inc., Clear Lake, Iowa.

JOB: Moving 4,000,000 cu. yd. for an eight-mile section of a four-lane divided highway (Route 69) near West Des Moines. Job includes cuts to 50 feet and Iowa's first complete cloverleaf.

CATERPILLAR FLEET: Two D9s, two D8s, three D7s, one D6, five DW21s, three No. 12 Motor Graders, one DW20, three D8-No. 463 Scraper units and three D6-No. 6S Bulldozers.

MATERIAL: Heavy glacial clay, shale, wet silty clay.

PRODUCTION: 20,000 yards per 20 hours on 2,000-foot round-trip hauls.

PERFORMANCE: "The D9 just can't be beat for power and for all-around performance. It really is showing its stuff in this tough clay. And this is our fourth season with some of the older DW21s. We've never had any transmission trouble or had the bowl off any of them. I feel sure our new DW21s will give us as good or better service."

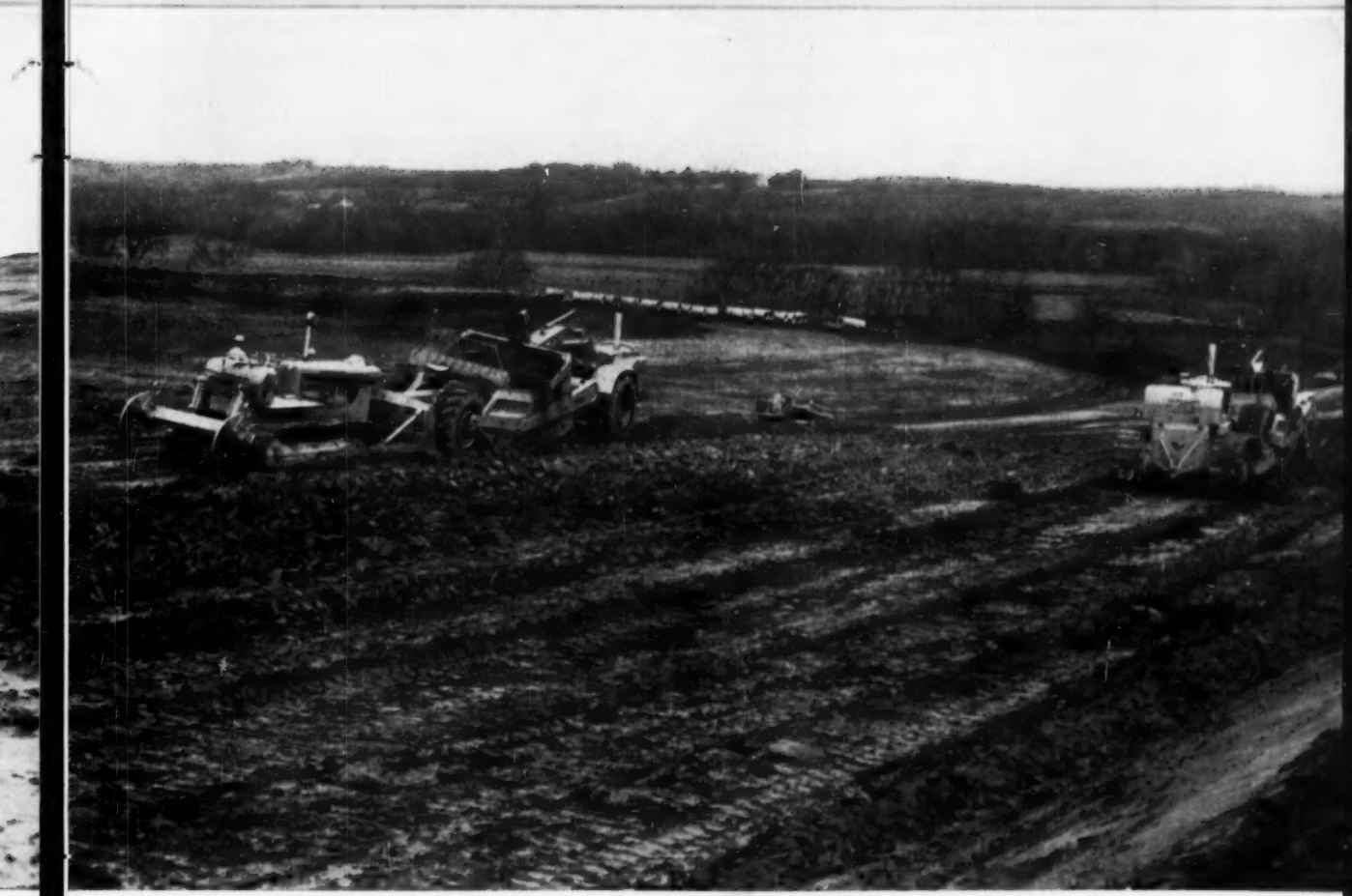
JACK R. HEPP
Project Manager

CAT* D9 Tractor push-loads a DW21-No. 470 Scraper in heavy glacial clay. Says Jack R. Hepp, Project Manager: "The D9 really is showing its stuff in this tough clay."

AMERICA'S new highway building program presents the nation's road builders with their greatest opportunity . . . their biggest challenge. That's why you'll find contractors using Cat-built equipment wherever you find the big, tough jobs. All the way up to the giant 320 flywheel HP D9, there's a complete line of Caterpillar track-type Tractors designed to deliver more production at lower cost with less down time. Whatever your own needs may be, just call your Caterpillar Dealer for a

builders

THEY'RE WORKING ON DIFFERENT SECTIONS OF U. S. 69 (IOWA'S NORTH-SOUTH INTERSTATE HIGHWAY). THEY'RE ENCOUNTERING DIFFERENT PROBLEMS. BUT THEY'RE BOTH DEPENDING ON CATERPILLAR FLEETS TO SOLVE THEM.



D8 with No. 8 Ripper push-loads a DW21, while at right a D9 push-loads a second DW21. Says Foreman Don Washburn: "Our new D8 with its ripper is really a productive unit."

demonstration. And remember this: you can count on him to back all his equipment with efficient 24-hour service and quality Caterpillar parts.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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WANTED—
THE HARD WORK

CONTRACTOR: R. B. Burch, Inc., Cedar Rapids, Iowa.

JOB: Moving 3,000,000 cu. yd. for a 10.8-mile section of Route 69, west of Indianola, Iowa. Cuts up to 50 feet.

CATERPILLAR FLEET: Two D9s, D8 with No. 8 Ripper, two D8s with sheepfoot tampers, 11 DW21s, and a No. 12 Motor Grader.

MATERIAL: Clay.

PRODUCTION: 35,000 cu. yd. per 20 hours on 3,600-foot round-trip haul.

PERFORMANCE: "Our new D8 with its ripper is really a productive unit. It loosens this hard clay, saving wear on our machines and giving us bigger loads. And our new DW21s are doing a great job. With the new LOWBOWL design, we load in the same amount of time or less and get three more yards per load."

DON WASHBURN
Foreman

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Racing Against Time on the Illinois Toll Road...

Scrapers Build Clay Embankment

NOBODY DOUBTS the value of scrapers as earthmoving tools. But few figure them to be outstanding claymovers. Yet they are doing an outstanding job of loading clay borrow and spreading it as fill for the $415-million Illinois Toll Road.

The road actually is three highways in one. Longest is the 89-mi North Illinois Toll Road that runs from the outskirts of Chicago to Rockford. Next in size is the Tri-State Tollway that runs parallel to Lake Michigan past Chicago. Finally, there is the 24-mi East-West Tollway that connects West Aurora with the southerly section of the Tri-State Tollway.

For nearly 193 mi of road, fleets of scrapers and a few loaders move huge bites of clay and deposit fill in 6-in. lifts as high as 18 ft. Push tractors help load and unload the scrapers. Six months from now, the scrapers will have handled more than 75,000,000 yd of brown and blue Illinois clay with contractors getting paid around $1.25 a yd for their work.

Road Goes Over Marshes

The job is a tough one. First, more than 90% of the road passes through some of the worst marshy lowlands in the state. The right-of-way runs across numerous peat bogs that must be dug out and filled. The Illinois Toll Road Commission planned it this way to cut the cost of right-of-way acquisition and to encourage residential and commercial development of the area.

The job is almost totally a borrow job, and the only borrow available is clay. Clay generally isn't regarded as suitable fill because of its instability. Engineers, though, decided that it could be made suitably stable by placing it in small lifts, disking it thoroughly, and compacting it with sheepsfoot rollers.

To get the borrow, contractors were required to buy land from local owners. A unique contract specification also required the contractors to trim borrow pits into predesigned lakes, fill them with water, and give them names.

A total of 32 contractors hold some 50 contracts on the job. Most faced the same clay-handling problems (there is only about 25,000 yd of cut required throughout the job). A typical



PULLING THE BOG—Draglines work as front runners to clear bog-ridden right-of-way before scrapers begin building up the roads' embankment. Bog, pulled from depths of up to 18 ft, was scattered with local farmers' approval over farmlands.

operation is a 4½-mi strip being constructed by O'Neil-Winkleman, joint venture contractors who hold several contracts throughout the job.

O'Neil-Winkleman found themselves with 1,000 lin ft of bog that had to be removed. Mounting Bucyrus-Erie cranes with dragline buckets on mud skids, they scooped the mineral-rich bog out, sometimes to depths of 17 ft, and spread it (with the blessings of local farmers) onto adjacent farmlands.

Fill Bog Pits

Cleaned out bog areas were built up with a special fill (usually bank run) trucked in from outside. A total of 30,000 yd of this fill was required on this section. The special fill was specified because of its drainage features. Clay figured to boil up through adjacent bog.

O'Neil-Winkleman had to buy enough land for three borrow pits where they could get some 1,-

continued on page 122



A BUMP HELPS UNLOAD—Push tractors normally help load a scraper. But on this job, due to clay's consistency, tractors bump the scrapers to knock the clay loose from pans.



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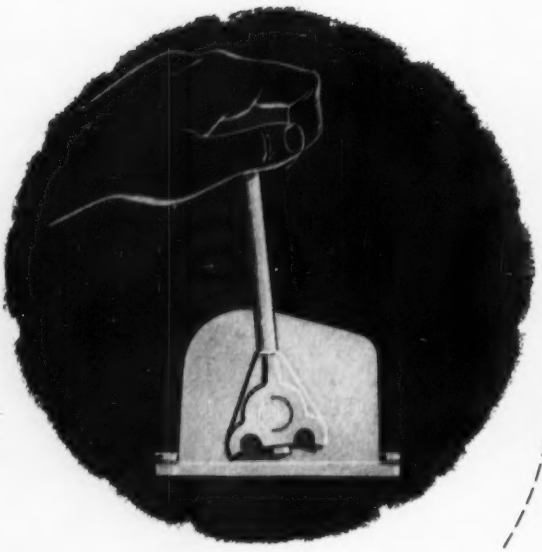
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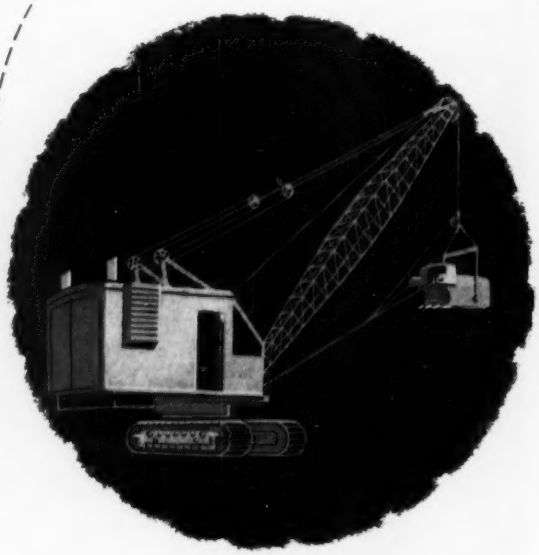
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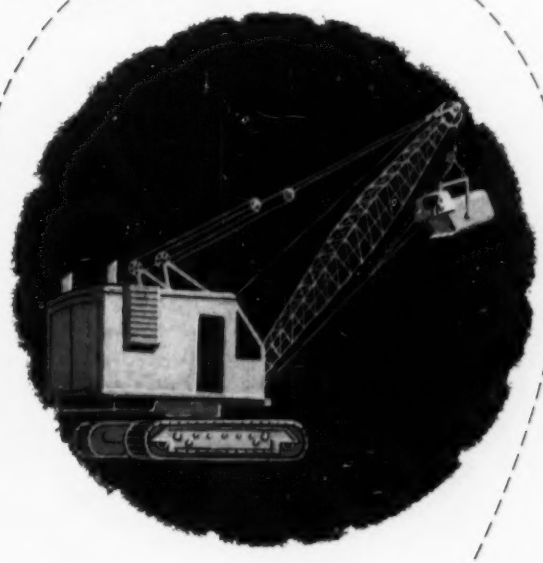
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ILLINOIS TOLL ROAD . . . continued from page 118

500,000 yd of clay. The question then came up of how the clay could be moved from the pit area to the road. Scrapers seemed the solution. They are fast, but most important they are capable of depositing the clay in the required 6-in. lifts.

The contractors sent a fleet of scrapers into action. Most on the job are Euclid S-18's and TS-24's. But included in the O'Neil-Winkleman fleet are some Cat DW 20's, several Tournapulls, and a few Gar-Wood pans pulled by MRS tractors. And with them operate teams of Cat D8 push tractor and graders to maintain haul roads.

When a scraper arrives at the borrow pit, a tractor moves down and helps load. The scraper then goes on its way to the road where a push tractor also helps in the unloading. Why is a tractor needed for the unloading? The clay tends to stick to scraper side walls. A couple of bumps from behind by the tractor shakes the clay loose.

Haul roads, which for the most part are clay, take a terrific pounding from the big rubber-tired machines. To keep them trim and to grade, four graders work full time. Haul distances on the job range from 1,000 ft to a mile depending on locations of borrow pits.

Disk Clay Dry

After each 6-in. lift is deposited, a Rome disker mounted on a D8 makes continuous passes over the clay, cutting it up into fine fragments to dry it out. Following closely behind, after several passes of the disks, are two tractor-drawn LeTourneau-Westinghouse sheepsfoot rollers. They compact each lift before additional clay is added.

Heavy spring and summer rains proved a thorn in the contractor's side. Clay in the borrow area got so soaked the contractor often had to resort to pumps to drain pits of water then wait a day or two for clay to dry enough to carry the loads of machinery traveling on it. Result was serious loss of time in the early stages of the job. To get back on schedule the contractor midway through the summer went on a day and night operation. This called for extensive use of field and equipment lighting.

Place Special Fill

Once grade has been reached and trimmed on the embankment, a 10-in. base course of select material is placed and compacted. This is followed by a 4-in. lift of granular subbase that is vibrated and roller compacted. The subbase will carry the road.

A 6-in. center line median drain backfilled with gravel is provided with 15-in. pipe from the center line median inlets to the outside of the toe.

Started in September of 1956, the entire project is scheduled for completion by December of 1958. Each route of the system when completed will have a direct connection with the eastern toll highway network that crosses Indiana, Ohio, Pennsylvania, New Jersey, New York, and the New England states.

Project manager for O'Neil-Winkleman is Robert Wall. Andrew DeSimon is superintendent.

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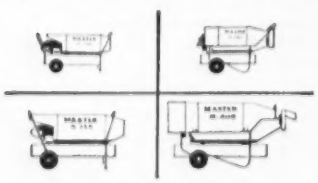


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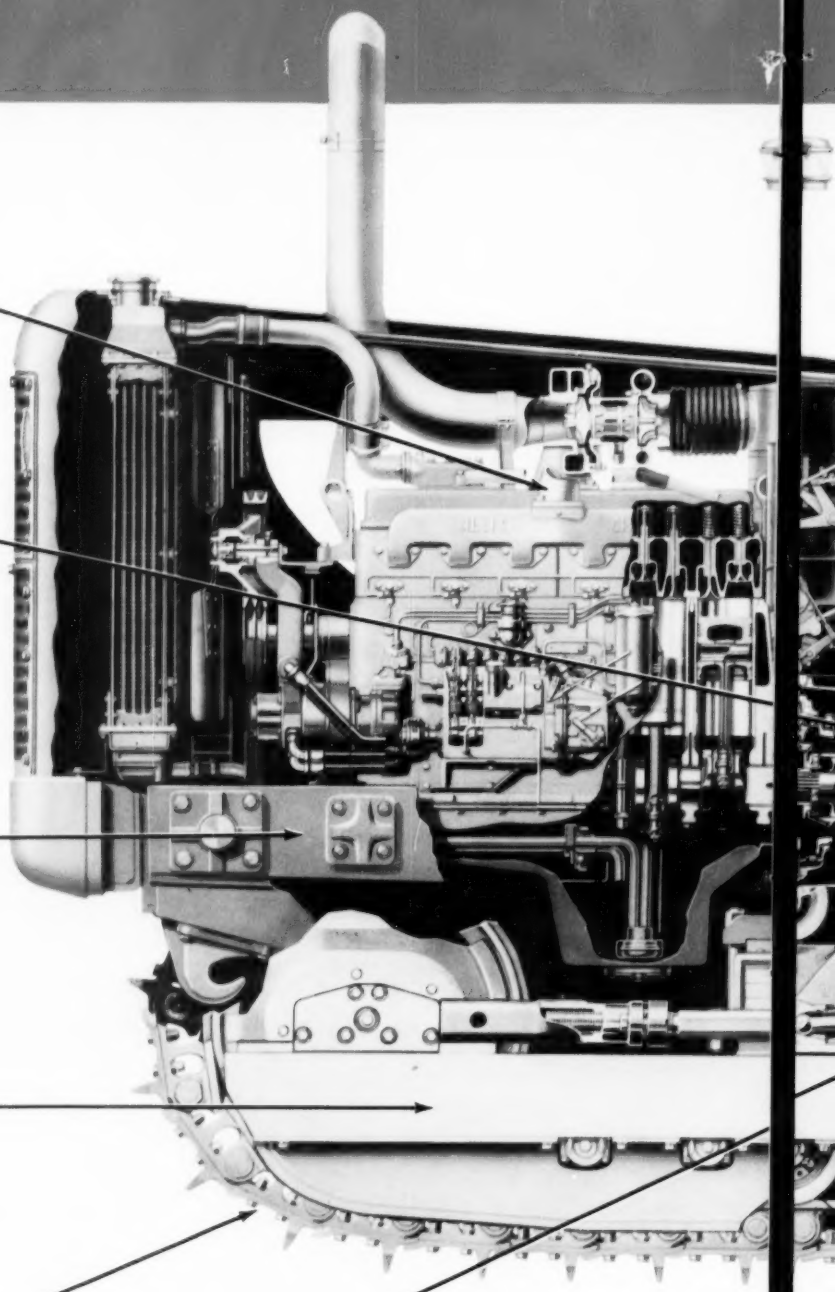
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Torque converter drive—means more production *automatically* . . . also lengthens life of power train, entire tractor and its equipment through hydraulic shock cushioning. And Allis-Chalmers gives you the benefit of *16 years'* experience in torque converter tractors.

Unit construction, time-saving serviceability with Box-A Main Frame design . . . let you remove engine, clutch, torque converter, transmission or steering clutches without disturbing adjacent units.

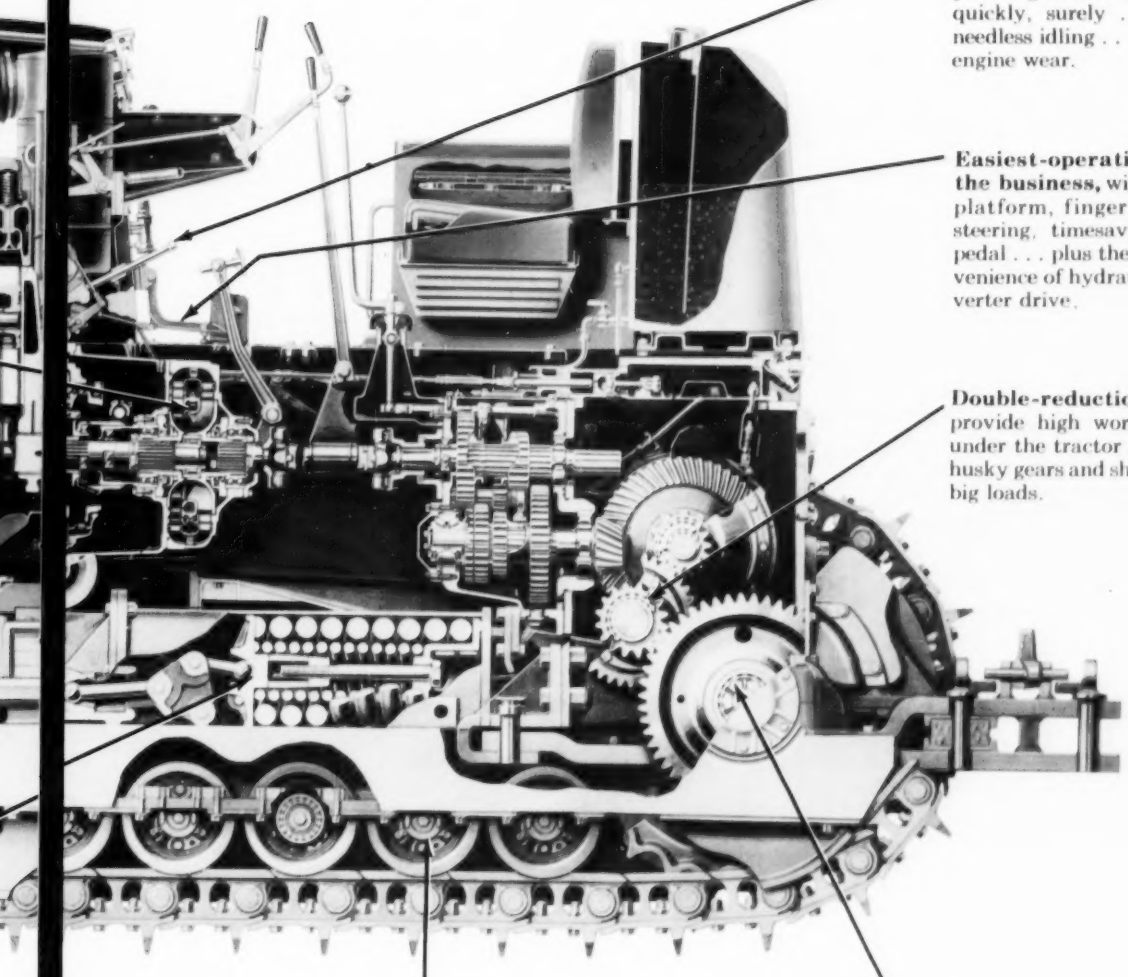
Cost-cutting alignment—Heavy-duty truck frames of special high-strength steel keep tracks, idlers, rollers and sprockets riding true for longer, dollar-saving life.

Toughest track you can buy—True-dimension machining and heat treating in the industry's most modern facilities insure outstanding wearability under severe job conditions.

Oil-enclosed track "safety valve" prevents jamming when rocks or other material get into tracks. It's reliable and requires practically no maintenance.

to big jobs...

plus matchless service ease



Direct electric starting—summer or winter—24-volt power gets the HD-21 rolling quickly, surely . . . eliminates needless idling . . . saves fuel and engine wear.

Easiest-operating tractor in the business, with clean, roomy platform, finger-tip hydraulic steering, timesaving decelerator pedal . . . plus the matchless convenience of hydraulic torque converter drive.

Double-reduction final drives provide high working clearance under the tractor . . . also permit husky gears and shafts for today's big loads.

Easy-rolling, easily maintained truck wheels—With Positive Seals and tapered roller bearings, the HD-21's truck wheels, idlers and support rollers ride freely on the track to deliver more usable horsepower . . . need lubrication only once every 1,000 hours to give you more production hours.

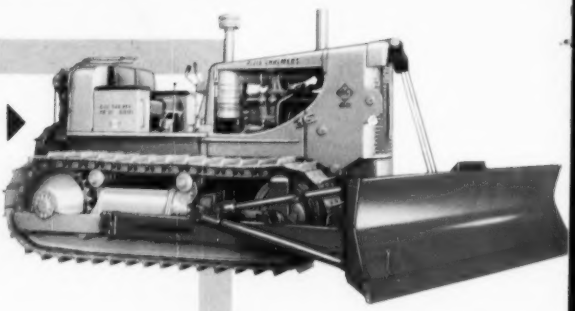
Straddle-mounting of all final drive gears—with tapered roller bearings on both sides . . . mounted in a one-piece, line-bored housing that insures constant alignment, longer gear life.

HERE'S

heavy-duty equipment

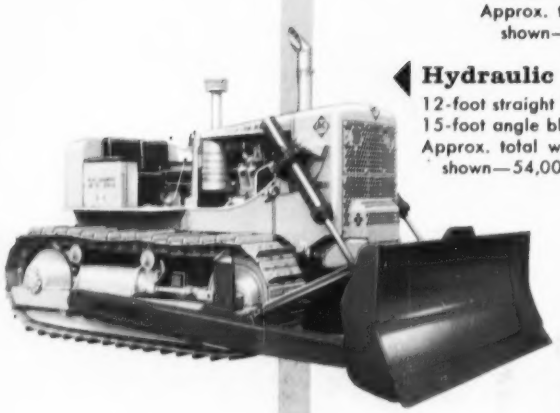
MATCHED TO THE NEW HD-21

. . . and to big-tractor jobs!



Cable bulldozers
12-foot straight blade
15-foot angle blade
Approx. total weight as shown—56,300 lb

Hydraulic bulldozers
12-foot straight blade
15-foot angle blade
Approx. total weight as shown—54,000 lb





Rear-mounted ripper
Hydraulically controlled
25-inch penetration
Approx. weight—8,275 lb

4-wheel scraper
15-yard struck capacity
20-yard heaped capacity
Positive forced ejection



You owe yourself a close-up look at the new HD-21. Your Allis-Chalmers dealer will be glad to demonstrate its live-power performance . . . and to prove it can help you on your big jobs.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Engineering in Action

LITHO IN USA D8



SPECS CHALLENGE BATCH PLANT—To meet aggregate requirements, concrete mix company on job uses this 150-ton, three-compartment Blaw-Knox plant with special grading screens.

ILLINOIS TOLL ROAD . . . continued from page 122

Winter Paving Will Make Up Lost Time

CATCHING UP on schedules is the most important thing on the minds of contractors beginning paving operations on the Illinois Toll Road. Spring and summer rains during the earthmoving work were costly.

Specs call for four to six lanes of 10-in. reinforced concrete paving in 25-ft widths. One of the fastest operations on the job is the spread near Rockford of John C. Peterson Paving Corp. of Baldwin, N. Y. Peterson, one of the first contractors to begin paving, is averaging a half a mile of completed 25-ft-wide pavement a day. One 11½-hr day netted the contractor 3,100 ft of pavement.

Peterson's operation is a fast one from cement and aggregate unloading to the actual laying of concrete. Heart of his system is a Blaw-Knox electronically controlled batch plant owned and operated by Peterson's concrete supply subcontractor, Certified Transit Mix Corp. of Commack, N. Y.

The plant consists of a three-compartment 150-ton aggregate bin equipped with a three-material, semi-automatic weigh batcher. A 1,200-bbl cement plant goes with it. The plant has two silos arranged in a cement recirculating system and employs a 75-ton per hr screw and bucket elevator.

To handle particular specifications on the screening of aggregates, Blaw-Knox supplied a two-deck vibrating screen that is mounted over the batching plant but supported independently. Two belt conveyors, one for sand and the other for the two sizes of gravel, charge the batch plant.

The sand conveyor rises directly from a ground surge hopper to one of the plant's bins. The other belt conveyor elevates both grades of gravel to a point above the vibrating screens. As the gravel falls onto the top screen, sizes over 1¼ in. are chuted into a compartment. All sizes under 1¼ in. pass through to a second screen. Fines of less than ¼ in. pass through the second screen of No. 4 mesh to waste and are carted away. Acceptable aggregate goes into another compartment. Capacity of each is 22 yd.

continued on next page



MAKING TIME WITH CONCRETE — John C. Peterson Corp. paving train here lays down 6-in. base course of concrete over clay-fill embankment for road.



LIMA ROADPACKER . . .
The cost-cutting vibratory compactor— proved on turnpike jobs

This is the hard-hitting, high-capacity machine that penetrates deeper—finishes a 13' width in one to three passes.

On this Ohio Turnpike job near Cleveland, Ohio, the LIMA Roadpacker is compacting a bank run gravel sub-base to an 8" high-density thickness. The LIMA Roadpacker's maneuverability was demonstrated efficiently on this job which required compacting operations in widely scattered sections—the problem of transporting cumbersome equipment and the duplication of units was eliminated.

Course aggregate for macadam bases up to 12" thick can be spread in a single layer, then uniformly compacted to final density over a 13'-1" width with the LIMA Roadpacker.

Single spread, which is permissible only with the vibratory method, reduces material handling by one-half or more—it eliminates backtracking of spreading equipment and contour shaping is needed only once.

The action of the vibration "runs in" screenings to full depth of macadam with only three operations. Much of the labor formerly required to spread, broom and roll is eliminated. The versatile LIMA Roadpacker performs with equal efficiency on both full-width and widening jobs.

Here's how the LIMA Roadpacker speeds up paving operations.

- Drives to job at 30 MPH.
- Compacts equally well traveling forward or reverse—no deadheading or turning around when two passes are required.
- Covers a 13'-1" width, one-half of a two lane road.
- Operator can easily fold end shoes for narrower working widths or for highway travel. Shoes are raised and lowered hydraulically.
- Low maintenance—all working parts are completely enclosed, can even operate under water or dirt. Shoes are driven hydraulically and are pressure-lubricated.

A fact-filled 4-page folder tells how the new LIMA Roadpacker will help you make more paving profits. Write for your copy today.

LIMA SHOVELS • CRANES DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation Hamilton • Loewy-Hydropress • Madson • Pelton • Standard Steel Works

ILLINOIS TOLL ROAD . . .
continued

Weigh-in of all aggregate is handled by one set of electronic scales, with another of the same type taking care of the cement.

Loading into trucks is a continuous operation that takes only one minute. A fleet of 32 trucks each containing three compartments for sand and aggregate and three bins for cement keep a constant supply of materials flowing to the mixer at the road site. A rate of 1,700 batches a day is maintained. Two-way radio connects the plant with the job site seven miles away.

Each of the trucks is equipped with unloading devices that permit dumping one cement bin and one aggregate compartment at a time into either of the two job-site pavers, both of which are fitted with jib boom and bucket for placing concrete.

The paving train all is Blaw-Knox. A subgrader first makes a pass to cut and level the grade to desired depth. The surface then is rolled, and contraction baskets are placed every 50 ft.

Following this is a paver and a spreader to lay the first 6 in. of concrete. Steel mesh then is placed, and the final 4-in. layer of concrete follows.

Then comes another spreader that vibrates the entire surface followed by a pair of concrete finishers and a longitudinal float. Last machine on the train is a mechanical sprayer that covers the surface with a curing compound. Sawing of joints ends the paving operation. Peterson's superintendent on the job is Reynold Scott.

continued on page 130

Big Dig! 2,776,000 cubic yards of earth and rock had to be excavated by J. Robert Bazley, Inc., for the Scranton-Allentown sections of the Pennsylvania Turnpike.



J. Robert Bazley, Inc., Pottsville, Pa.

uses ESSO MULTI-PURPOSE GREASE H ...cuts lubricating costs, prevents errors

J. Robert Bazley, Inc., of Pottsville, Pa., recently completed 9.78 miles of the Pennsylvania Turnpike's new Northeast Extension. Preparation work on one section involved the heaviest excavation on the entire extension. (One cut was 1000' long and required moving 697,000 cubic yards!)

Bazley uses Esso Multi-Purpose Grease H in *all* equipment – for chassis, wheel bearing and general lubrication. Its performance has been truly outstanding . . . equalling or excelling the performance of several special-purpose greases. And Multi-Purpose Grease H has meant considerable savings, too. For one thing, there is no need of stocking a variety of greases. This means simplified inventory – resulting in faster dispensing. But even more important, there is never any chance of using the wrong lubricant and causing damage that could result in costly repairs and down-time.

Bazley now operates over 500 pieces of major power equipment. They *all* run on Esso fuels and lubricants *exclusively*. In fact, for almost *20 years*, Bazley has depended upon Esso products for the finest engine performance...maximum power, fewer breakdowns, longer life. They've never been disappointed!

For better results . . .

ESSO

PETROLEUM PRODUCTS

Esso Products and services are available through Esso Standard Oil Company plants and offices in more than 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, the Carolinas, Tennessee, Arkansas, Louisiana and the District of Columbia.



MASS PRODUCTION—Long prestressing bed, one of several scattered along right-of-way produces several units at a time.



PLACING BEAM FORMS—Workmen set steel forms into place prior to casting of prestressed concrete beams. Form-Crete's

ILLINOIS TOLL ROAD... continued

Prestressing Beds



PLACING PIER FORMS—Crane lowers prefabricated pier form into place over grade beam. Reinforcing steel basket, prefabricated on job, already has been placed into form.

PRESTRESSED concrete girders connect the piers of nearly all the bridges on the Illinois Toll Road. More than 4,000 girders will go into the job. Bridges consist of a foundation of open concrete pipe piles sunk into drilled-out caisson holes and filled with concrete. Piers and stringers are cast in place, then connected by precast concrete beams 60 to 80 ft long.

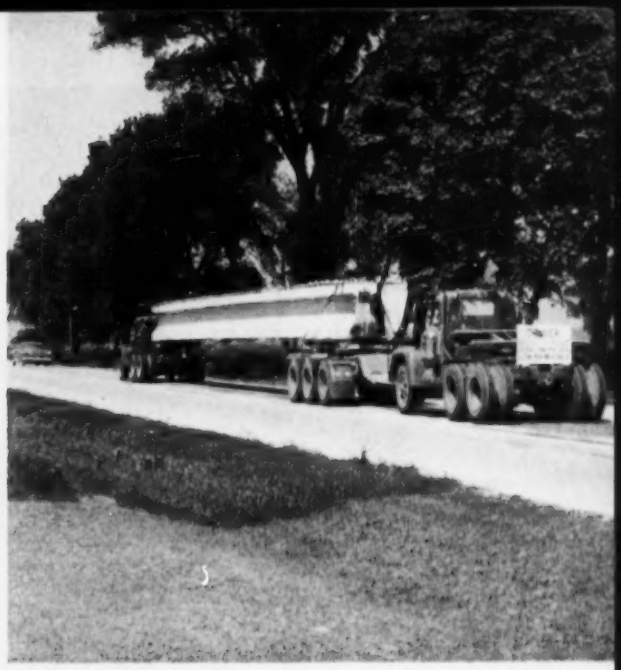
Beams are being furnished under four contracts involving three different contractors. They are Material Service Corp., American Marietta Co., and the Union Chemical and Materials Corp. Some of the beams are being cast and stressed under subcontract by Midwest Prestressed Concrete Co. of Rochelle, Ill. One plant is at Algonquin; two more are in McCook.

Cast Beams Near Job

Beams are cast in specially prepared beds of varying lengths. But several beams, depending on size, are cast simultaneously on each bed. Hydraulic jacks stress the beams. Concrete reaches a compressive strength of 7,400 psi in 28 days. Beams are hauled to various bridge sites on special truck trailers operated at low speeds on roads adjacent to the right-of-way.



forms are fabricated to the side-wall shape of beams and sectionalized for easy placing. Handle lock (right) helps release forms.



SLOW ROLL TO JOB—Prestressed beams have to be trucked to work site slowly because of local laws. They measure up to 70 ft.

Turn Out 4,000 Girders



SINKING FOUNDATIONS—Crane lowers precast, open-end concrete pile (later to be filled with concrete) into bored-out hole.



SETTING THE GIRDERS—Manitowoc crane lowers prestressed girder that will support concrete slab into place over piers.



AT THE GRAVING DOCK—Two bridges across graving dock pour concrete for the pontoons. First bridge pours the floor slab; second bridge, following closely behind, makes wall pours. Completed pontoon with steel superstructure is tied up offshore.

Bridge Floats Across Lake On Big Concrete Pontoons

CONCRETING METHODS stand out on an unusual job in British Columbia—construction of big reinforced concrete pontoons for a floating bridge across Lake Okanagan.

The bridge is the first of this type to be built in North America in nearly 20 years. It will be 2,885 ft long between approach rockfills that are 1,400 ft long on the west bank and 300 ft long at the other end. Length of the bridge itself includes a 175-ft steel approach span at the west end and a 660-ft, three-span steel bridge with a 284-ft lift span at the east end.

The floating section is made up of two 50x50-ft transition pontoons that support steel approach trusses at mid-point and 10 pontoons each 200 ft long by 50 ft wide. These pontoons have 56 cells and are 15 ft deep.

Four of the pontoons—two at each end—mount steel superstructures to raise the roadway grade to meet approach span level. On the other six units, the roadway runs over the concrete deck.

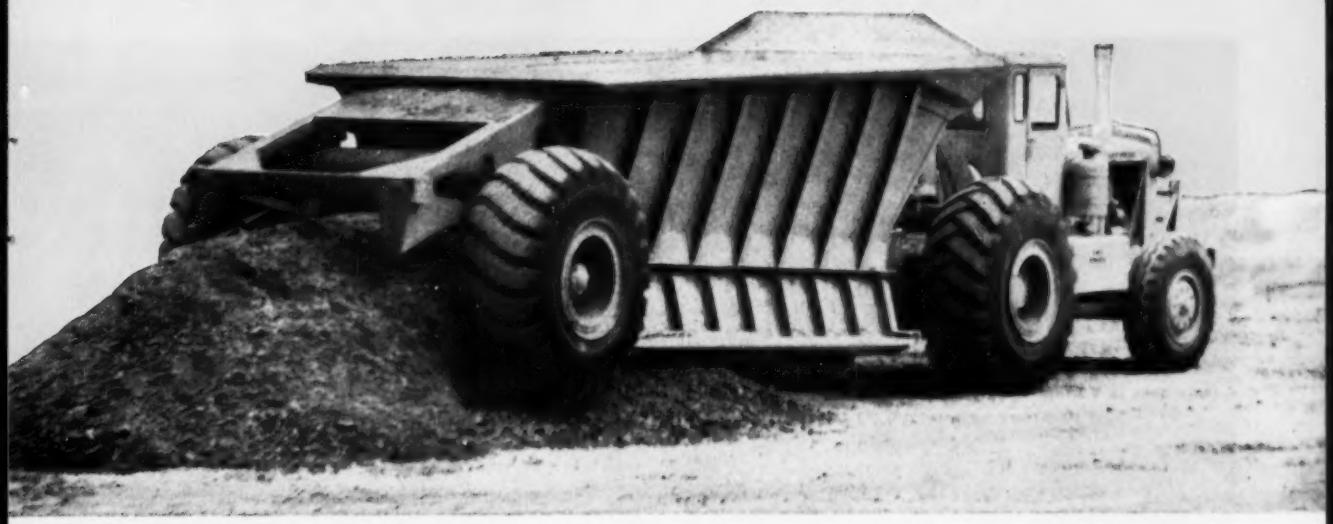
To anchor each pontoon, a pair of heavy concrete anchors—one on each side—will be jetted at least 20 ft into the soft lake bottom. High strength steel cables with a net area of 3.2 sq in. will connect the anchors to the pontoon.

Adjacent pontoons are connected by 1¼-in. dia high strength bolts, 146 of them for each connection. The area between adjacent pontoons then will be filled with pressure grout and sealed watertight with rubber seals along the bottom and sides.

Kelowna Bridge Contractors, a joint venture of General Construction, Co. Ltd., of Vancouver, B. C., and Pacific Bridge Co. of San Francisco, Calif., holds a $4.7-million contract for construction of the pontoons and the approach span bridge. Emerson Hail is project manager with Chris Andersen as general superintendent.

Continued on page 136

A *NEW** Kind of Bottom Dump!



NEW ATHEY-CAT PW20-DW20

New design features for faster, lower cost material handling.

"T-1" Steel Construction — PW20 40-ton payload capacity is nearly 4 times trailer weight. No excess weight, lower operating costs, less maintenance.

High Clearance Rear Design — Up to 5 ft. rear clearance speeds up dumping cycles, prevents tie-ups at the dump.

3-Door Dumping — Load empties through wide bottom doors and rear door. Material dumps instantly, or can be windrowed under positive hydraulic-actuated control.

Low Loading Height — An average height of only 8' 9½" cuts down shovel loading time, gives you more yards per hour, more loads per day.

Powered by Cat DW20 — World-proved Cat DW20 Tractor powers this new team. High speeds, low maintenance, maneuverability — are a few of the DW20's many features.

Steep Side Slope — 18° side plate angles help speed dumping, give less "funneling" action to material.

The latest in the earthmoving field! It's the new Athey PW20 Bottom Dump Trailer and it's loaded with new design features. Constructed of high-strength "T-1" steel, the PW20 is trimmed of excess weight, capable of handling 40-ton payloads at less cost. The capacity of the PW20 is nearly 4 times the trailer weight.

An exclusive high arch axle and 3-door design eliminate resistance of the dumped material. The load is dumped through three doors: two extra wide bottom doors and a rear door. The unit rolls easily away from the dumped load, without tire spinning, cutting time from your dumping cycles.

Combined with the Cat DW20 Tractor, the new PW20 offers you unequalled material handling performance — big-capacity payloads, high-speed hauling, easy loading, instantaneous dumping, high production and low maintenance.

There are many more reasons for putting the PW20 to work. Get the story from your Athey-Cat dealer, or write for new PW20 booklet. Athey Products Corporation, 5631 West 65th Street, Chicago 38, Illinois.

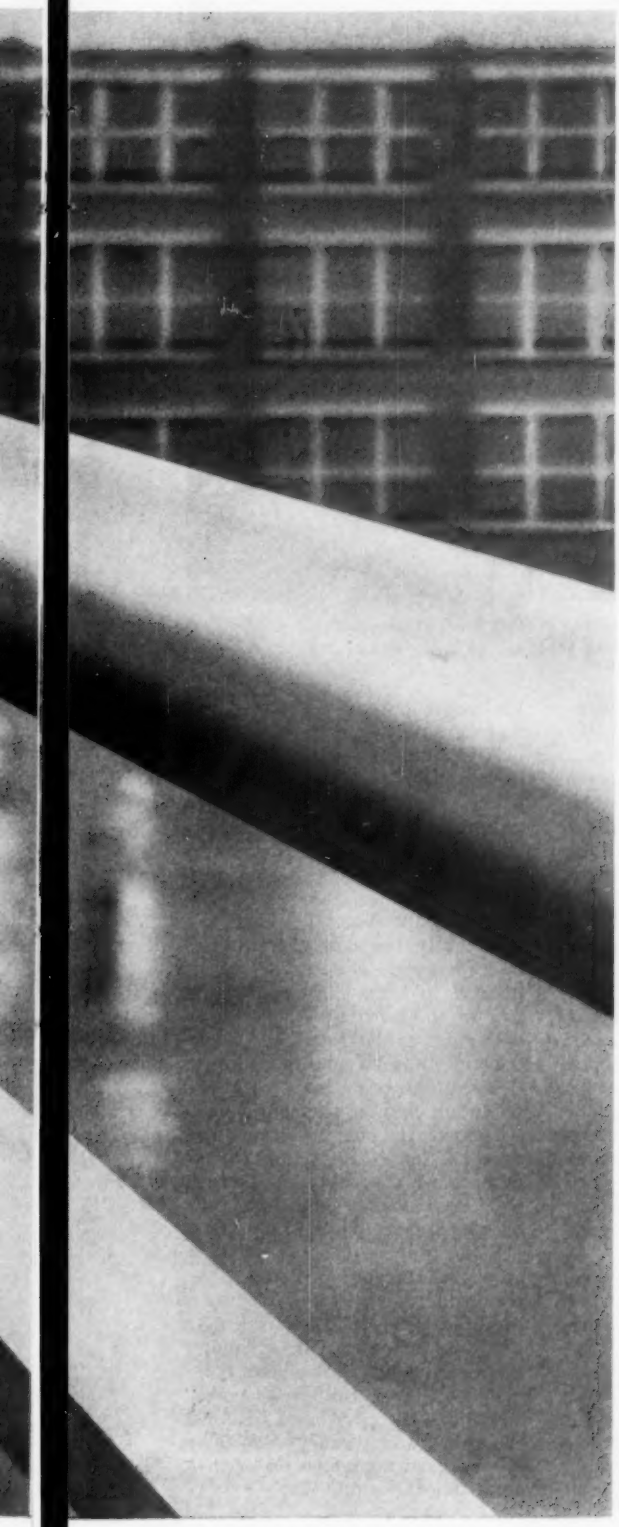
Athey

THE *Complete* TRAILER LINE... *by the Leader*

The last light touch . . . Flynn



aluminum bridge railing

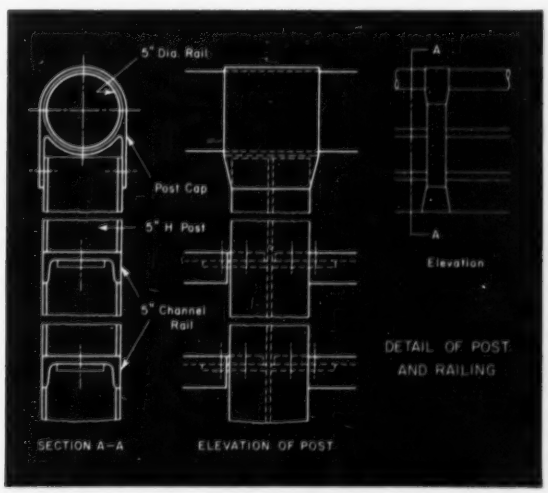


One man can easily install bridge rails when they're Flynn aluminum. But that's only a part of the savings story.

Aluminum rails never need paint, always look new and attractive. Flynn aluminum bridge railing *weighs 66% less than steel.* You can design to less weight yet lose nothing in usability or durability. This is especially important to drawbridges such as the one pictured going up in Wilmington, Delaware. Bridges open faster with less motive power when they weigh less. That means a saving in power machinery.

Flynn bridge railing components are available in a wide variety of standard designs. They can also be extruded and cast to your individual specifications. Deliveries are prompt. And Flynn technical service is at your disposal to assist you.

You'll get complete information quickly by writing or calling any of the Flynn offices listed below.



Details of post used on Walnut Street Bridge, Wilmington, Del. This is one of many possible designs using Flynn standard extrusions and bridge railing components.

MICHAEL FLYNN MANUFACTURING COMPANY

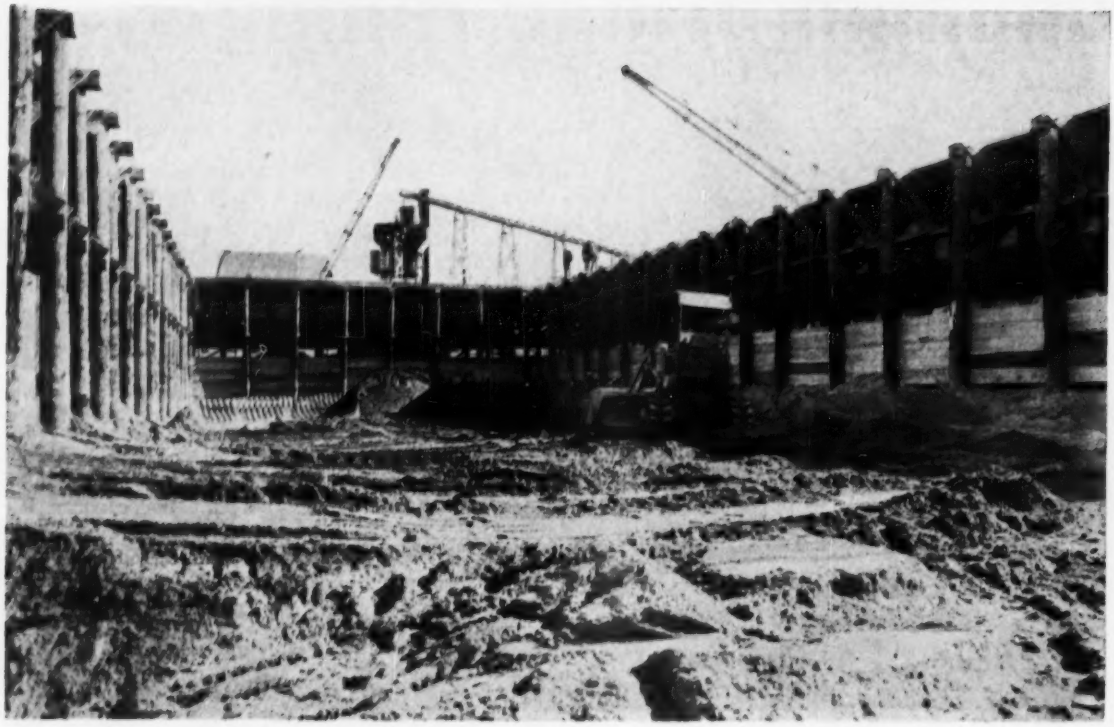
Aluminum Division

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700 EAST GODFREY AVE., PHILADELPHIA 24, PA. ..... Tel.: Fidelity 2-5500

Sales Offices:
51 EAST 42ND STREET, NEW YORK 17, N. Y. ..... Tel.: YUkon 6-6020
937 RADCLIFFE ROAD, TOWSON, MD. ..... Tel.: VAlley 3-2090
133 MAPLE STREET, SPRINGFIELD, MASS. ..... Tel.: REpublic 3-2814
2009 E. 25TH STREET, LOS ANGELES 58, CALIF. ..... Tel.: ADams 3-5157
THOMAS BLDG., 1314 WOOD STREET, DALLAS 2, TEXAS ..... Tel.: Riverside 8-5935

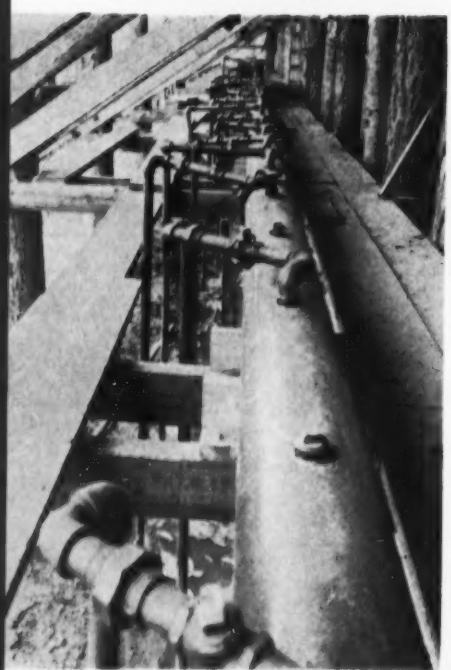
FLYNN
EXTRUSIONS

FLOATING BRIDGE . . . continued from page 132



EXCAVATING THE SOUTH DOCK—A Cat D6 Traxcavator digs the south dock to a depth of 19 ft to accommodate deep transition pontoons and precast floating caissons for approach span pier foundation. Piling will be driven into floor and capped.

Pontoons Are Cast In Graving Docks



WELLPOINT HEADER—Each basin requires 250 wellpoints on 18-ft risers.

The contractor began construction of the two big graving docks last winter so that they would be ready for the first concrete pour on the pontoons in the spring. Each dock is 220 ft long and 58 ft wide. The north dock is 15 ft deep, and the south dock is 4 ft deeper to accommodate casting of the deeper transition pontoons and the floating caissons for the approach span pier foundations.

Excavation for the graving docks served two purposes. In addition to providing the depth required by the huge floating concrete pontoons, it supplied fill for a large work area. Draglines excavated an offshore shoal of sand from fingers extending into the lake. Then carrying scrapers spread the sand fill for the work area.

Double rows of heavily braced timber piles outline the graving docks. They are spaced on 10-ft centers in both directions. The piles are capped and decked to provide a service platform for the dry docks.

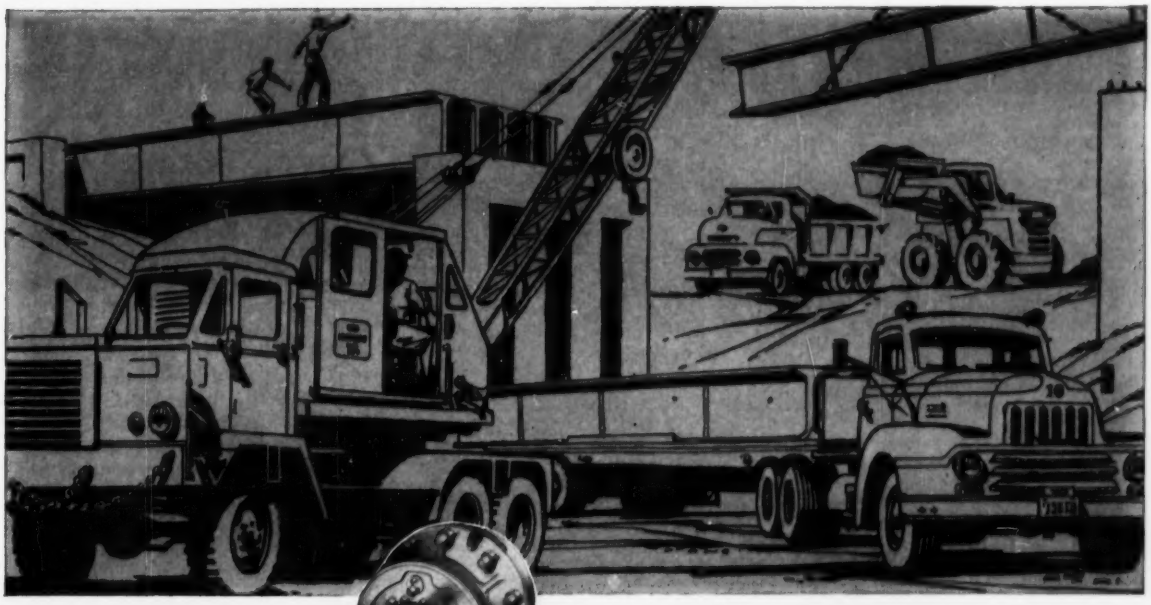
Wellpoints and headers between the double row of piles dewater the area. Each basin has about 250 wellpoints on 18-ft risers. Wellpoint pumps are housed in underground precast concrete basins that are watertight. By keeping the elevation of the wellpoint pumps low, double-stage pumping is eliminated. And the pumps do not have to be moved when the graving docks are flooded because they are protected by the watertight housing.

Actually the wellpoint pumps operate even when the basis is flooded to keep the water level low in the perimeter sands. Dewatering of the graving docks is handled by larger sump pumps.

The north basin has two 10-in. wellpoint pumps; the south basin —located in coarser sand—has four 8 and 10-in. wellpoint pumps. All pumps are powered by electric motors, and a standby diesel electric set is available.

Sheet pile cutoff walls at the lake end of each dock keep lake water out. Above the cutoff walls, the contractor cast concrete gate sills supported on wood poles. Each gate consists of a steel truss and laminated timber assembly covered with plywood. To hoist the gates, a stationary steel tower on one side teams up with a crane on the other side.

continued on page 138





Check the amazing performance records set by this unique

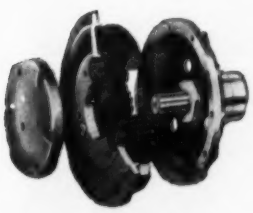
CLARK Planetary Axle

ideal final drive for

• Excavator-cranes and other heavy-duty industrial machines • Tractor Shovels, Bulldozers and similar construction equipment • Tandem Drive Units in all applications.



Primary Reduction in the center section, by helical bevel pinion and gear.



Second Reduction in the drive wheel —a sun gear splined to the axle shaft and three planet gears driving an internal gear in the inner periphery of the wheel, as close as possible to the point where tractive effort is applied.

Two types: steering and non-steering.

You've never, in all probability, seen anything quite like this extraordinary performer, for the reason that there isn't anything just like it.

Look at this record of the Clark Planetary Axle—

• 70% LESS TORQUE LOAD ON SHAFTS —planetary drive assembly takes 70 per cent of the torque load off the axle shafts. Result: shaft wind-up and surge are practically eliminated—and *broken shafts are virtually unknown.*

• LIGHTER WEIGHT—YET STRONGER—severest torque loads are handled easily by shafts and gears actually smaller in size and therefore considerably lighter in weight than other axles of equal capacity.

• ROAD SPEEDS UP TO 30 MPH—big time-savings in job-to-job travel.

Important: A number of operators, faced with difficult hauling conditions, have converted equipment of conventional type by installing Clark planetary axles—with remarkable success.

Doesn't it make complete good sense to find out about this remarkable piece of equipment—and how it may solve your problem? The coupon will get you prompt delivery of full information.

CLARK EQUIPMENT COMPANY • AXLE DIVISION, Buchanan 6, Michigan

CLARK® EQUIPMENT

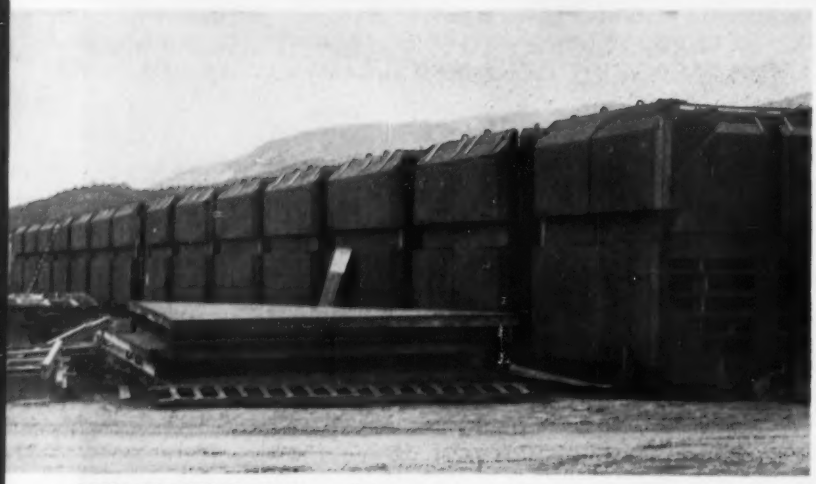
Please send illustrated bulletin on the Clark Planetary Axle.

Name_____ Position_____

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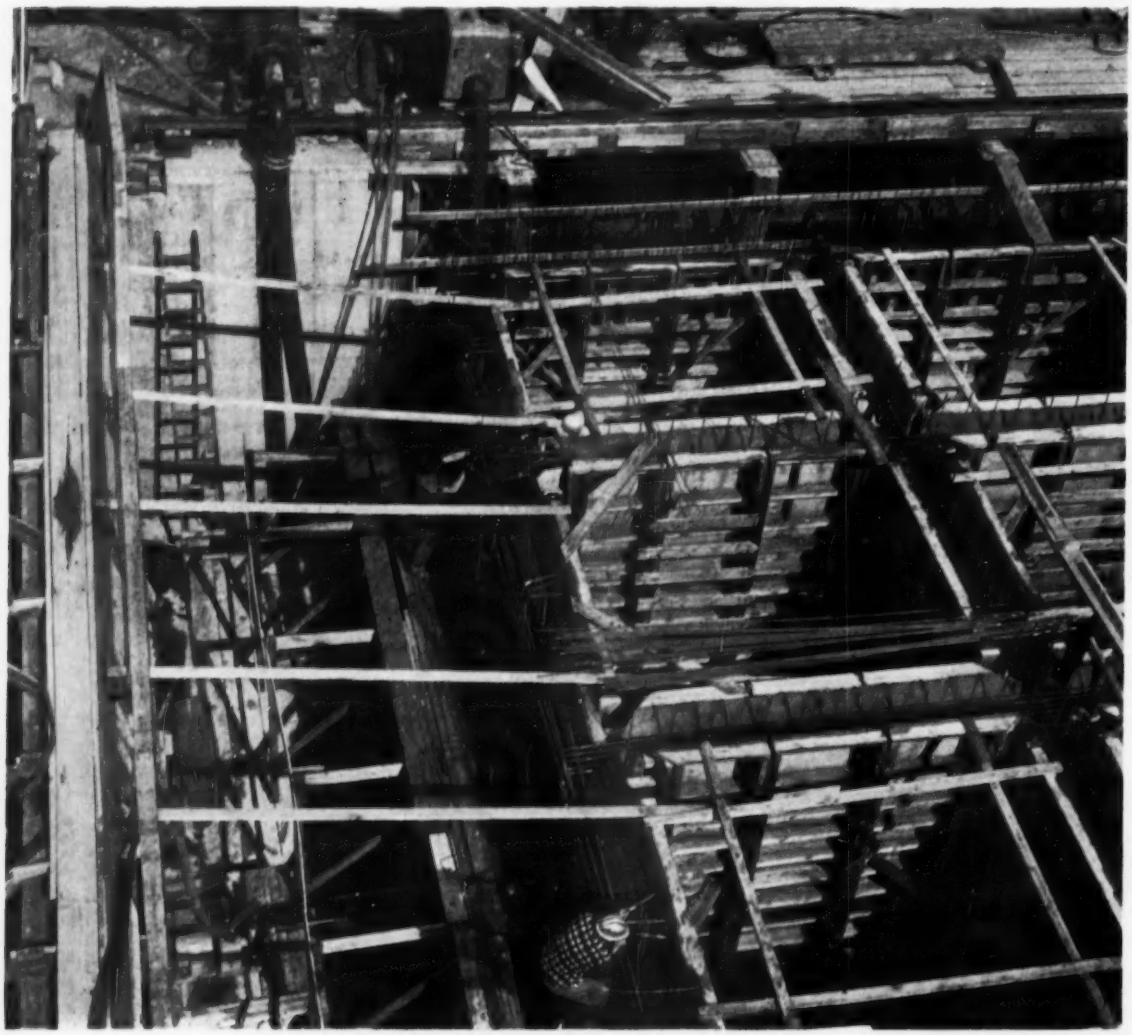
FORM STOCKPILE—Pontoon cell forms are re-used five times and re-assembled after each use. Horizontal indentation in forms is for beam to resist ice pressure.

FLOATING BRIDGE...
continued

Clever Forms Simplify Stripping

Carpenters fabricated the inside forms for the pontoons in a rented warehouse during the winter. When the graving docks were completed, the forms were ready for the first concrete pour.

Pontoon cell forms are supported by horizontal studs and vertical walers. They break out in four panels except for the ex-



PLACING STEEL—Walls and slabs of the pontoons have heavy reinforcing—about 450 lb per cu yd of concrete. Placing steel in the thin walls is time-consuming job.

terior forms that come apart in smaller sections to provide for a horizontal beam at water level whose purpose is to resist ice pressure.

The contractor provided a complete set of 56 cell forms for each dock. Each set has five re-uses. Cells for the smaller transition pontoons are smaller; those forms were not re-usable.

The bottom plywood form for the pontoon floor slab is supported on piles with a cap system of 12x120 timbers and 2x10 joists. After the base slab reinforcing is placed, the pontoon cells are positioned; nails in the dock bottom show location. Cells are placed on male-female positioner assemblies on two opposite corners. Screw jacks put the cells at exact elevation.

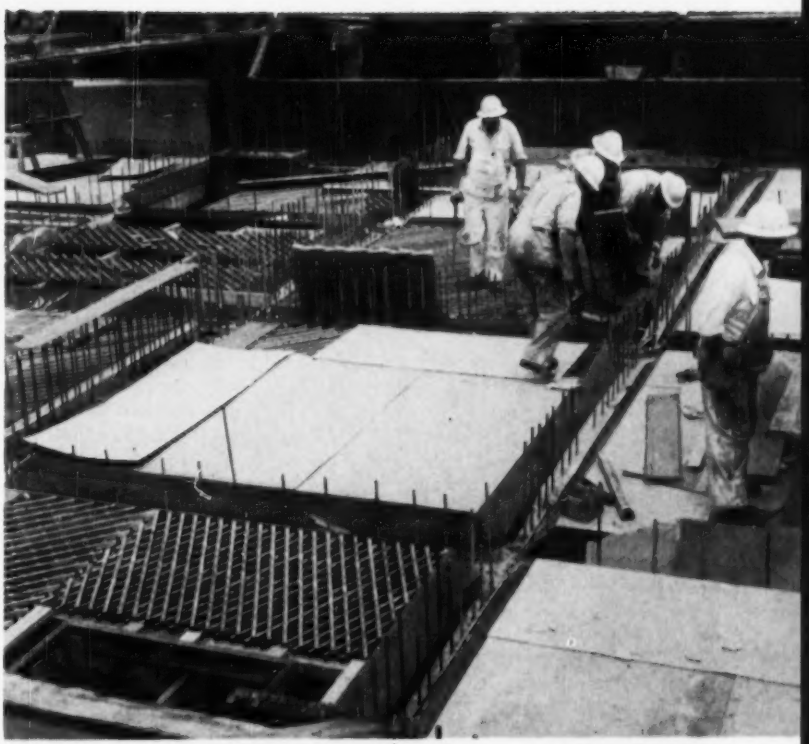
Forming the deck presents unusual problems. Forms must be stripped and removed through 2x4-ft manholes. Each group of four cells is a single, watertight compartment provided with a manhole, so most of the forming material must pass through at least one opening between cells in addition to passing through the manhole.

Expanding form supports that can be handled manually make it possible to work in such restricted space. The supports are 1⅛x1⅛-in. strips of Sitka spruce joined on 3-in. centers by cadium-plated drive rivets that permit rotation of the pieces. They span 38 in. fully extended and collapse to 22% of the expanded size. They eliminate about 50% of the forming pieces.

All walls and slabs have heavy reinforcing; steel totals about 450 lb per cu yd of concrete. Placing this large amount of steel in the 6- and 10-in. walls is time consuming and complicates concreting. Concrete Reinforcing Engineering Co., Ltd., of Vancouver, the only major subcontractor on the job, sets in the reinforcing.

In all it takes about three to four weeks in the graving dock to cast each pontoon. About 10 working days are required to form the bottom slab and the walls. Then, after pouring concrete up to the top deck soffit, it takes another four working days to strip the cell forms and form the deck. Pontoons are launched two days after the deck is poured.

continued on page 142



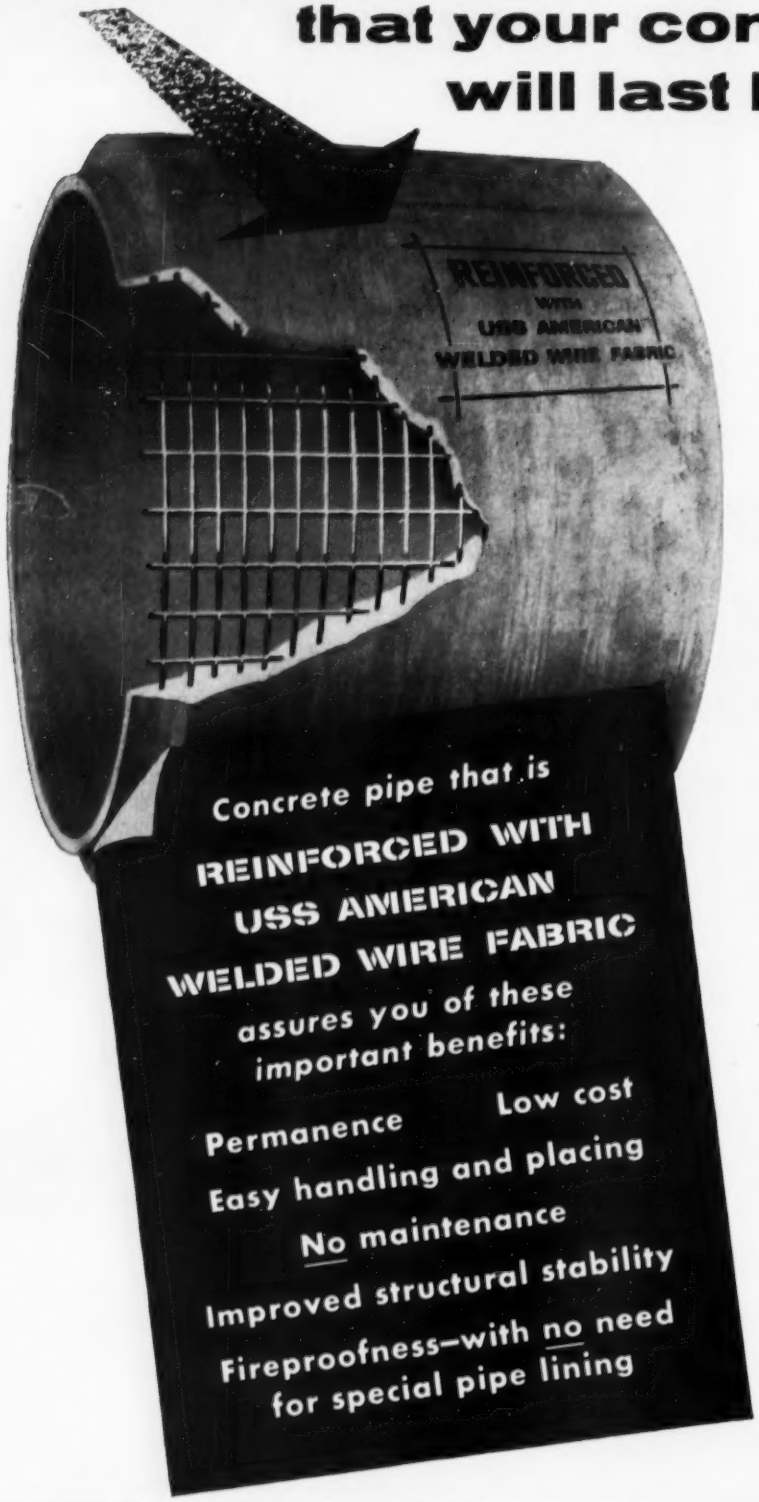
COLLAPSIBLE FORM SUPPORTS—Wood grids supporting top slab collapse to 22% of expanded size so they can be stripped and taken out through small openings in cell blocks.



SPACIOUS WORK AREA—Built up with sand fill excavated from graving dock, work area provides plenty of room for storage, haul roads, and other necessary facilities.

HERE'S ASSURANCE

that your concrete pipe will last longer!



Reinforcement with USS American Welded Wire Fabric adds strength and permanence of steel to concrete pipe. It reduces the cost of installation and maintenance. It gives you a higher-quality job.

For the Best Reinforcement be sure it is USS American Welded Wire Fabric. This reinforcement is precision-manufactured from quality cold-drawn steel wires. Its quality is rigidly controlled to assure you a fabric that meets every specification—exactly—shipment after shipment.

USS American Welded Wire Fabric is made in a complete size range to suit any type of sewer or culvert, in circumferential wire sizes up to and including ½" at 2", 3", and 4" on centers. Write or call for more information.

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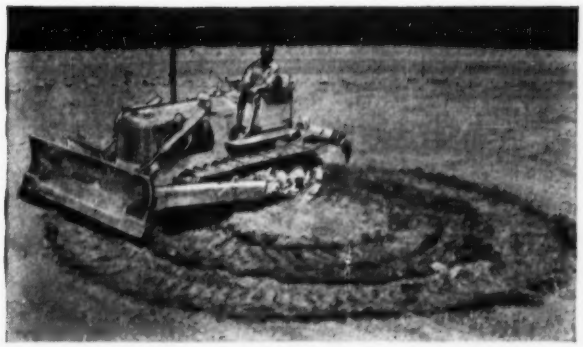
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...new POWER-TURN steering speeds up your angleblade work



Even on sharp turns like this you have *full power on both tracks!* There's no speed transfer from one side to the other. Each track is always working at full power and under complete control. You never lose power on any turn. Two simple steering levers make operation easier.

Picture a tractor that can hold a straight line while pushing or pulling the heaviest side draft loads. No drift! That gives you full power on *both* tracks on every turn—sharp or gradual. That does away with cross-steering downhill. That's the Oliver OC-12.

POWER-TURN steering pays off all around —in bigger production, in smoother operation, easier maneuvering, less fatigue. It's more dependable, too, because it's simpler. Planetary reduction gears for each track give you full control at all times.

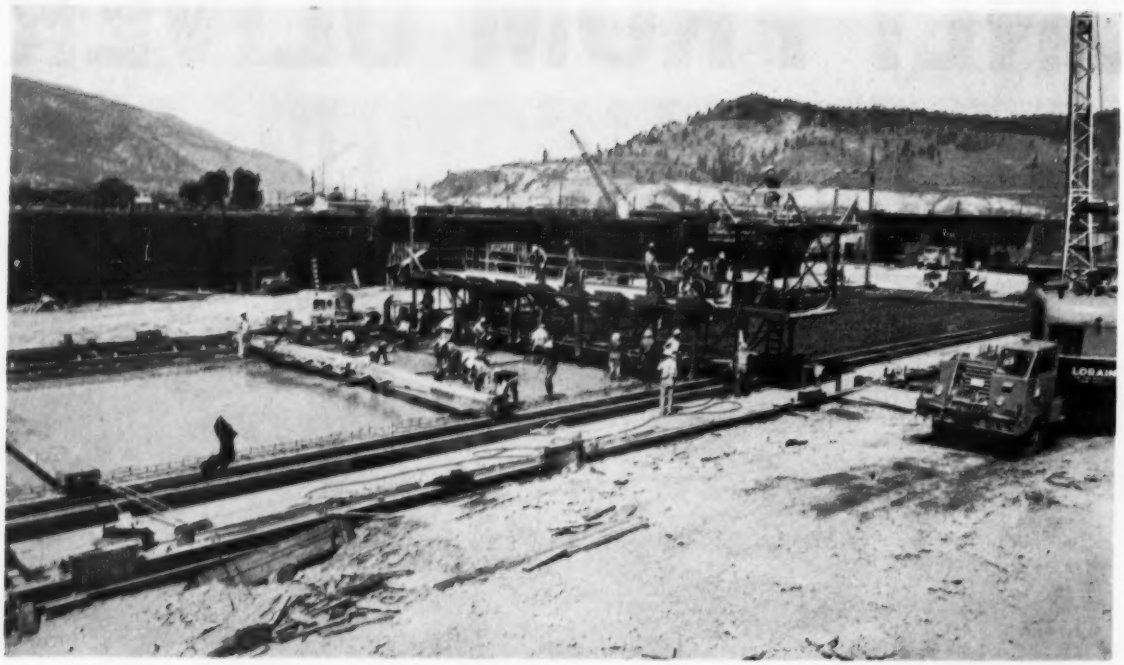
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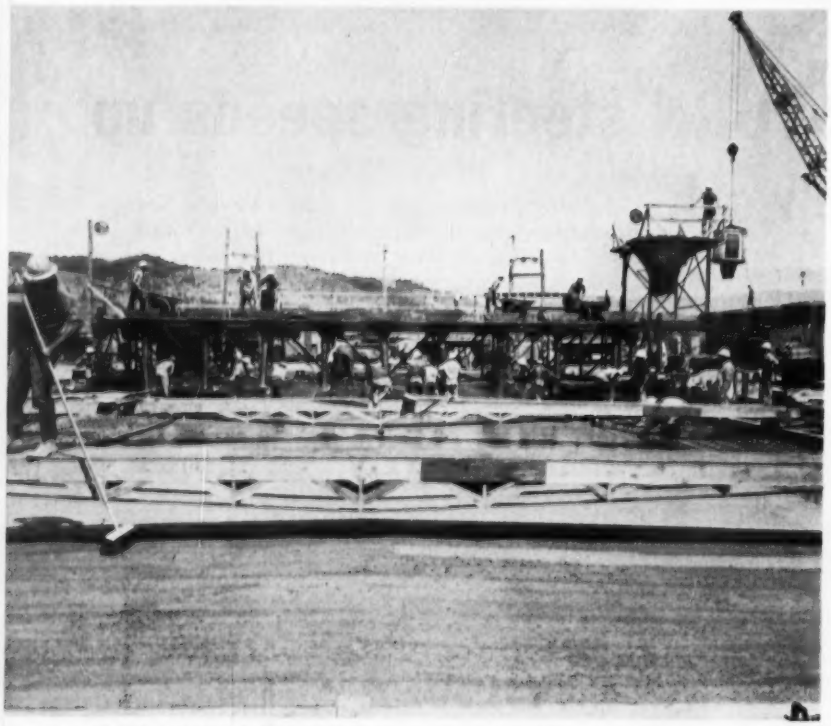
400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment



FIRST BRIDGE—Garbo hand buggies move concrete from 6-yd hopper on bridge to elephant trunks. Truck crane loads hopper with mix delivered by truck in 1-yd buckets.

Single Pair of Rail-Mounted Bridges Handles Concreting at Both Dry Docks



SECOND BRIDGE—Finishers work from a steel cable reinforced timber bridge on the deck slab. Deck to serve as roadway is struck with Master vibratory screeds.

Two rail-mounted gantries that span the width of the graving dock pour concrete for the floor slab and the walls. The front bridge pours the slab, and the second bridge, following fairly closely behind, handles wall concreting. A single bridge makes the deck slab pour. The one pair of bridges handles concreting at both graving docks. They are moved from one dock to the other by a crawler crane.

Each bridge carries nine Dryer electric vibrators with 1⅜-in. dia heads. The small size head is necessary because the walls are only 6 in. thick and heavily reinforced. In addition, the forms are vibrated from the outside by Ingersoll Rand chipping guns with bucking heads.

Concrete is delivered to the graving docks by truck in 1-cu-yd buckets that are dumped into a 6-cu-yd hopper by truck crane. Garbro hand buggies move the concrete to elephant trunk hoppers mounted on the bridge.

A Noble automatic batch plant with two T. L. Smith 2-cu-yd mixers supplies concrete. The plant has a capacity of 80 cu yd per hr. Pouring the bottom slab and walls requires about 800 cu yd and takes about 30 hr.

Aggregate comes from a mountainside pit near the job. Be-





GRAVEL PLANT—Aggregate comes from a nearby pit where no water is available so it is washed and re-screened on the job.

MOVING THE BRIDGE—P&H crawler crane with 120-ft of boom picks up the bridge and moves it from one dock to other.



INSIDE A CELL—Project manager Hail points out beam to resist ice pressure.

cause of concrete placing requirements only natural gravels are used; no crushed material is permitted.

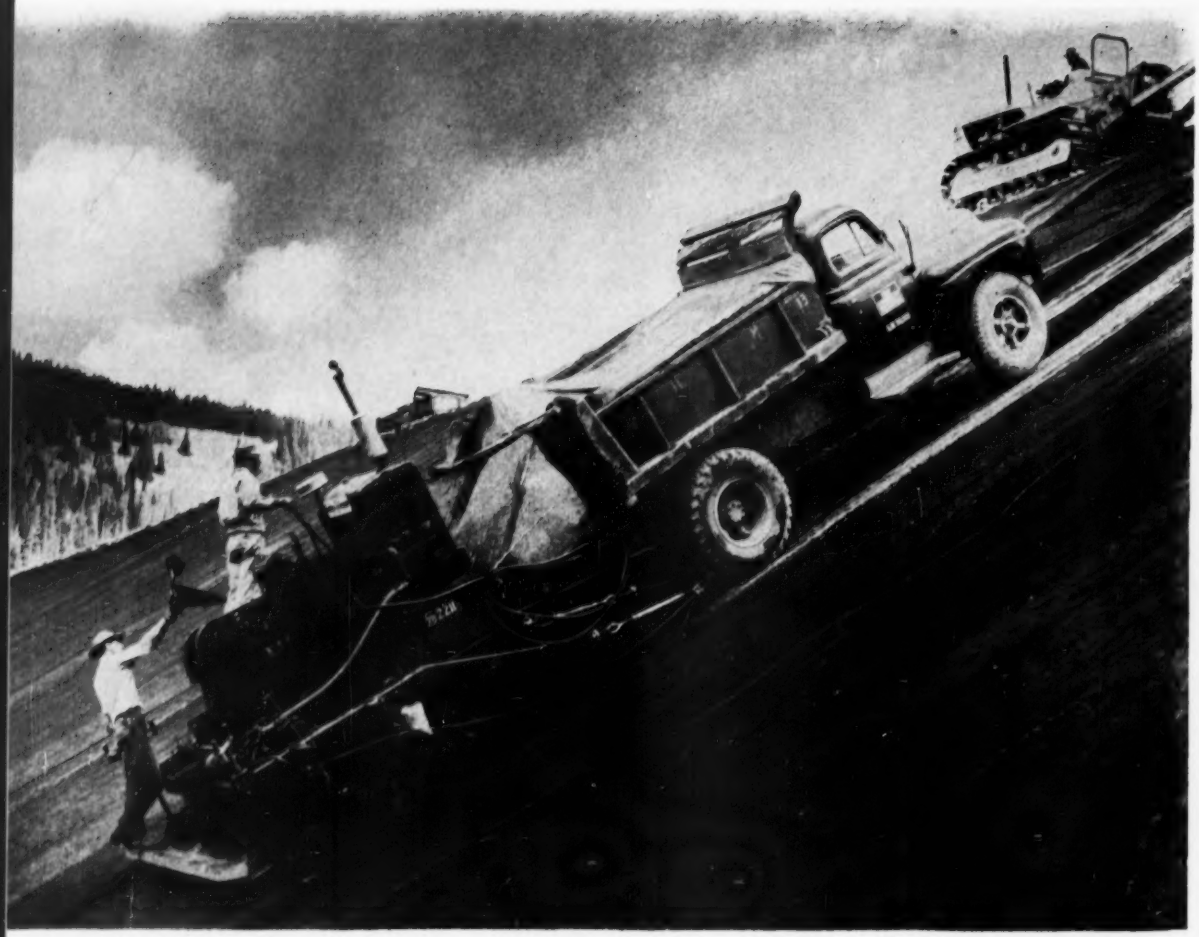
Gravel is stockpiled in three sizes—No. 4 to ⅜; ⅜ to ¾; and ¾ to 1½ in. The large size goes into the mix for the piers and other heavy members but is not used in the pontoons.

Sand is stockpiled in two sizes. The aggregate source is deficient in fine sand so the contractor takes sand from the lake to make up the deficiency.

Aggregate comes to the job rough-screened in the three sizes plus sand. Because no water is available at the pit, the aggregate is washed and re-screened at the job.



BATCH PLANT—Noble automatic plant—the only automatic plant anywhere in the area—has capacity of 80 cu yd per hr, easily keeps up with the 800 cu yd, 30-hr pours.



PAVER RELOADS—Supported by a cable from winch atop dam, Barber-Greene paver waits while truck dumps batch of asphalt in 12-ton hopper. Trucks are raised and lowered by another winch and cable. Note tilted seat and screed platform on paver.

Paving on a 58% Slope

HERE are the problems that faced San Ore Construction Co. of McPherson, Kans., when they tackled the job of laying an asphalt face on Montgomery Dam, high in the Colorado Rockies.

- The 113-ft high face is on a 58% slope.
- The crest is barely wide enough for two trucks to pass.
- The 10,800-ft elevation cuts engine efficiency.
- The paving season is extremely short.

The job called for the laying of 12 in. of asphaltic concrete on the 1,900-ft long upstream face. The dam is 400 ft wide at the base, and required about 20,000 tons of mix.

Key to the fast paving operation was a combination turntable and winch. It handled batch trucks on top of the narrow crest, moved the paver ahead after each pass, and also raised and lowered both trucks and paver over the extremely steep slope.

Basically, the 50-ton skid-mounted turntable consisted of two parts—a two-track turntable and a winch platform. The turntable was 16 ft in dia and rotated on a 4-in. center pin nested in ball bearings. On the adjacent platform were mounted two electrically driven winches, one for trucks and the other for the Barber-Greene paver. Both winches were controlled by an operator from a cab mounted on the side of the turntable so that it overlooked the upstream face of the dam.

The turntable was equipped wih two winches—one ran over the table and the other ran underneath. The one on top handled all truck movements and also helped to begin the paver's descent. When the paver completed a strip it also hoisted it aboard. The other cable that ran underneath the table was designed strictly for lowering and raising the paver on the steep slope. It laid on the surface of the dam and was straddled by the asphaltic batch trucks.

When one strip was completed



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Another big advantage is All-Wheel Steer. This takes you in and out of the tight places and permits complete control of the rear end. Working as a team, All-Wheel Drive and All-Wheel Steer enable you to go places and move things impossible with other machines.

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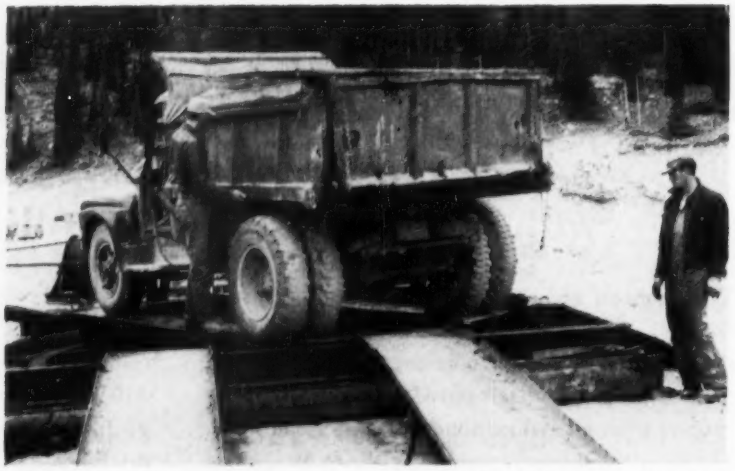
AURORA, ILLINOIS, U.S.A.



Handling the Paver

BACKING DOWN RAMP—Paver begins descent from turntable. Cable supports rig until it leaves ramp. Then second cable running underneath turntable takes over.





Turning the Trucks

TURNTABLE—International truck mounts table, waits to be rotated 90 deg.

ROTATING—Loaded trucks are turned by winch; empties are rotated by hand.

PAVING ON A 58% SLOPE... continued

the paver was pulled on to the turntable, two D8's skidded the heavy rig to the next position. Normally, only one D8 would have been required, but the thin air at that altitude cut engine efficiency way below normal.

As soon as the turntable was positioned, the paver backed down the ramp, but was restrained by the top cable. This cable ran from a hitch on the front of the paver, back to a horizontal sheave mounted above the turntable, then back to a winch. When the paver left the ramp and was about to start down the slope, it was stopped temporarily while the lower cable was hitched to the front and the first cable removed. The purpose of this maneuver simply was to get the paver off the turntable. The second cable, which ran underneath the turntable, handled the paver during the rest of its trip down and then up the face.



TWO WINCHES—Operator in cab overlooking face of dam winches paver beyond ramp where second winch takes over. Pair of electrically powered winches mounted on platform beyond turntable haul trucks and paver up and down slope.



STEEP SLOPE—Truck begins long descent down 58% slope to paver. Door on driver's side is removed for quick escape.



TRUCK DUMPS—Six yards of asphaltic concrete is fed into paver's 12-yd hopper. Rig waits for full hopper before paving.

To power the turntable winches, 2,400-v current was brought in from a nearby high-line and dropped to 440 v by a transformer. One 100-hp generator powered the DC gearmotors on the winches. Rheostats varied the speed of the winches.

Batch trucks hauled mix from a 6,000-lb Barber-Greene automatic plant to the turntable. Here, they drove up a steel ramp and on to the two tracks of the turntable where men rotated each truck 90 deg by hand. The top cable then was connected to a hitch on the front of the truck, and the winch lowered the truck down the steep slope to the paver.

Modified Power Lays Mix

All paving was done with a modified Barber-Greene crawler-mounted unit. Worked out by San Ore's master mechanic, Everett Roubideaux, the modifications were simple. He tilted both the operator's seat and the screed man's platform, added a 12-ton hopper, and strengthened the frame.

The enlarged hopper added seven tons to the machine's nor-



DEADMAN—International TD-18 tractor is tied to turntable by 7/8-in. steel cable to serve as deadman. Although table's 50-ton weight is designed to absorb pulling loads, contractor added deadman tractor as extra precaution.



TRUCK BACKS DOWN—Barber-Greene paver awaits load while vibrator roller makes pass.

mal five-ton capacity, permitting it to hold two truck loads. To distribute the pulling load back into the frame, turnbuckles were extended back from the front bar on which the pulling cable was hitched.

At the bottom of the slope, the paver waited till it was loaded by two trucks. Then one of the two winches hoisted it up the slope as it spread its 4-in. thick layer of asphaltic concrete at a speed of about 10 fpm.

Although the machine laid a normal 12-ft width, the strip actually was somewhat less because it was overlapped onto its predecessor by 2 to 6 in. This is a greater overlap than is normally employed on road paving, but it was done to achieve greater compaction at the joint.

When the paver ran out of material its progress was halted by one winch while the other lowered batch trucks down the slope to fill the hopper. Empty trucks could be pulled up the steep face at speeds up to 100 fpm. The longest strips, which were about 200 ft long, were paved in about 40 min. And when the machine reached the top of the slope it was hoisted aboard the turntable by the second winch. Then the two tractors skidded the turntable to the next position, and the operation was repeated.

Compacting the asphalt on such a steep slope also required some clever modifications of equipment. Instead of using conventional rollers, San Ore turned to an Essick 3,000-lb vibrating unit with a 54-in. steel roll. To keep the rig upright during rolling, the contractor added a pair of rubber-tired wheels. And on top of these they mounted a drum of water which fed a simple spraying system.

Major problem with the rolling was getting the machine on the newly laid asphalt as soon as possible to roll the entire width of the strip while the paver placed the next strip alongside. San Ore solved this problem by mounting a side boom on the rear of a D7 tractor. The cable from the rear winch was reeved through a sheave at the end of the boom and then ran down the slope to the roller. The long boom permitted the operator to roll the full width of the strip without getting in the way of the turntable.

After completing one course along the entire face of the dam, the turntable was skidded back to the starting point and the operation repeated. The 12-in. thick facing was built up by one

continued on page 152

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Davis 210 digging flush alongside a building.

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Only the Davis Loader-Backhoe allows you unrestricted vision. You can see why this rig, with many such exclusive features gives you **more earning power.**

You sit high on the backhoe so you can see exactly where you're working and you move with the boom so you always face the bucket — just like on the big power shovels.

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The Davis Loader — with built-in strength and streamlined design — has been widely copied, but never equalled.
You would naturally think that this rig would cost you more, but it actually costs less than most other makes.

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RAY-MAN CONVEYOR BELT...

Outlasts Them All on Tough Hauls!

R/M engineering makes the difference with this heavy duty conveyor belt. Ray-Man Conveyor Belt features a new construction of covers and strength members to resist cuts, tears and abrasion to a degree never before possible. R/M's exclusive "XDC" Cover adds an extra measure of protection and long life not available with any other belt. And beneath the cover, cushioned strength member plies, in an envelope of strong, flexible synthetic fabric, resist the impact of heavy, shock loading and ripping. The belt troughs easily and trains naturally.

Ray-Man Conveyor Belt holds fasteners better than ordinary belts . . . requires no breaker strip. Like all R/M heavy duty belts, it's moisture resistant and mildew-proof. You get longer, trouble-free service . . . "More Use per Dollar" with Ray-Man as well as other R/M conveyor belt constructions, including extra-cushioned Homo cord for unusually abusive shock loading, and R/M Tension-Master for extra long lifts, high tensions.

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● TRAINS NATURALLY

● RESISTS IMPACT

● DOUBLE COMPENSATION RELIEVES OUTER PLY STRESSES

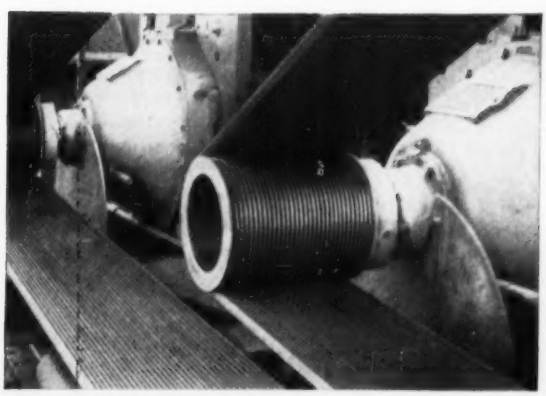


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Write for Bulletin #6638

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PAVING ON A 58% SLOPE . . . continued from page 148



VIBRATING ROLLER—Previous strip is compacted by Essick vibrating roller. Rig is pulled up and down by D7 winch working through side boom mounted on rear.



SHORT HAUL—Both aggregate and mixing plants are set up in valley near dam. Dozers push bank run material on to grizzly which feeds Cedarapids crushing plant.

4-in. hand-laid course and two 4-in. machine-laid courses. The first course had to be laid by hand because the rock surface was too rough for paving equipment.

Montgomery Dam is the last step in the completion of a new water supply system for the City of Colorado Springs, Colo. The city has obtained the right to tap the flow of the Blue River at a point some 75 mi northwest of the city. The river will be brought through a diversion tunnel under Hoosier Pass and stored in the valley of the Middle Fork of the South Platte River.

Built last year by Fisher Contracting Co., Phoenix, Ariz., Montgomery Dam required the placing of more than 700,000 yd of rock. The big problem was reducing the amount of fines to a bare minimum to prevent the possibility of retained water rupturing the asphalt membrane due to alternate freezing and thawing. Fisher solved the problem with a Universal Wobbler, a mining-type screen. Basically, it consists of parallel elliptical bars that rotate to give rock a tumbling action that causes fines to fall through and on to a belt.

Men on the Job

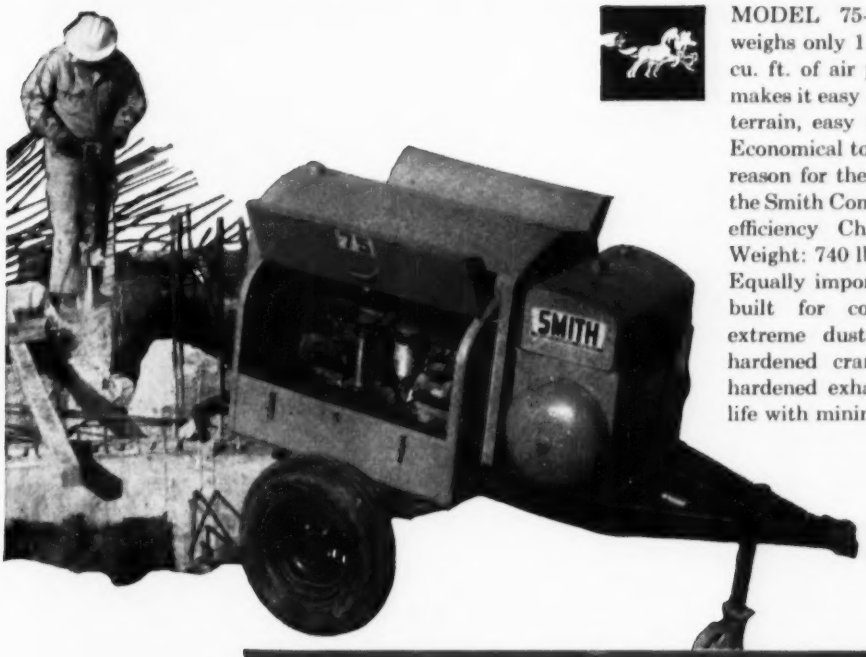
Representing San Ore were Dean Dillon, project manager; Keith Robertson, assistant project manager; Everett Roubideaux, master mechanic; and William Nuttall, paving superintendent.

Black and Veatch, consulting engineers, were represented by W. G. Koulas, resident engineer.



ASPHALT PLANT—Barber-Greene 6,000-lb automatic plant quickly turns out batches.

Plenty of push behind the punch...



MODEL 75-P Smith Air Compressor weighs only 1,450 lbs. yet delivers over 75 cu. ft. of air per minute. Compact design makes it easy to maneuver even over rough terrain, easy to tow even at high speeds. Economical to operate, too. One important reason for the low weight to output ratio: the Smith Compressor is powered by a peak efficiency Chrysler Industrial Engine—Weight: 740 lbs. Displacement: 265 cu. in. Equally important, the engine is specially built for continuous operation under extreme dust conditions. For example, hardened crankshaft, tri-metal bearings, hardened exhaust valve seats assure long life with minimum maintenance.



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in-line 6 Engine (265 cu. in. displacement) powers Smith Compressor—and many other makes of equipment in the construction and materials handling field. There are four Chrysler in-line 6s, two V-8s—ranging from 230 to 354 cu. in. displacement.

Chrysler
INDUSTRIAL ENGINES
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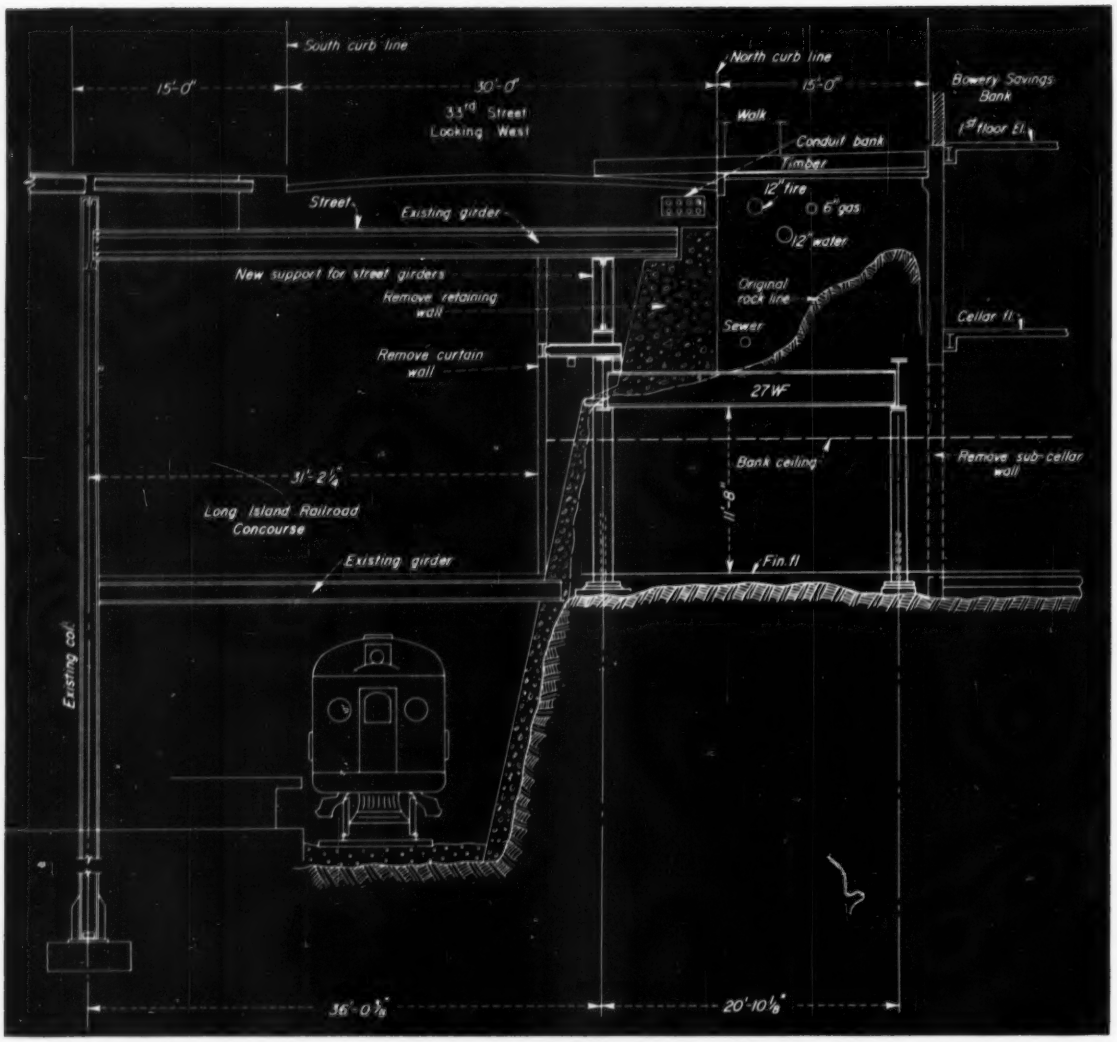
Write Dept. F11, Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan or see your nearest Chrysler Industrial Engine Dealer.

☐ For engineering information ☐ For descriptive literature

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CUT AND COVER—Construction for new bank space at New York's Pennsylvania Station calls for intricate street-girder load transfer from retaining wall to new girder, plus tedious rock excavation with 2,500 half-stick charges.

Tricky Excavation Under Terminal

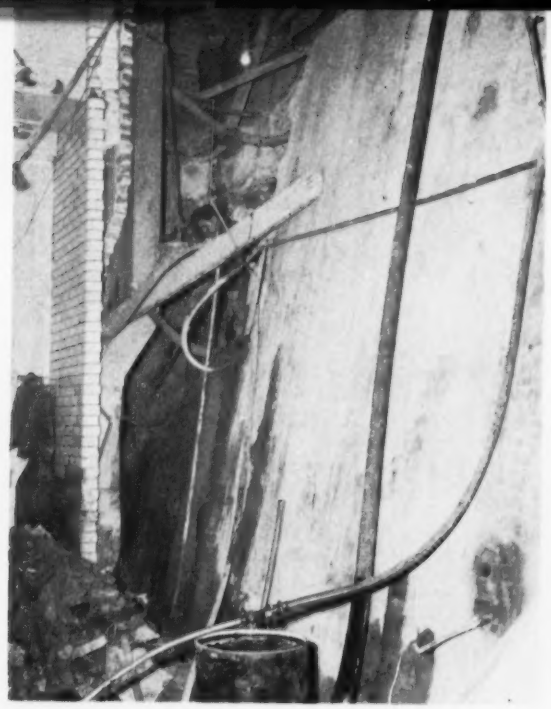
By O. W. KAYSER
Supervising Project Engineer
Gibbs & Hill, Inc.
New York, N. Y.

AN EXCAVATION JOB involving the removal of only 1,500 yd of rock and concrete rarely demands anything but casual attention. Yet, hollowing that small amount for a new bank under New York's Pennsylvania Station required all the talents of a seasoned cut-and-cover subway builder.

Almost 30 ft beneath street level, The Bowery Savings Bank's new $400,000 Commuters' Savings Service faces the Long Island Rail Road concourse of Pennsylvania Station. Formerly the commuter saw a blank glazed-brick wall. And 27 in back of this wall was the sub-basement of a street-level building that houses a branch of Bowery Savings Bank. In between lay rock, concrete, and dirt that had been backfilled around utility pipes near the surface.

The 27-ft wide space, running 60 ft along the station wall, had to be excavated while the contractor, Salson Construction Co., Jamaica, N. Y., supported the street and also kept several underground utilities in service. When construction began, bedrock lay as shallow as 7 ft beneath 33rd Street.

The portion of the street overlying the concourse is supported on steel girders, which formerly rested at their north ends on a concrete retaining wall built atop a bedrock ledge 15 ft below street level. Below this ledge the rock face had been covered with concrete at a steep, uniform slope down to concourse floor level (and continuing down to railroad



WALL CHASE—Workmen break out chase in sloping concrete-sheathed rock to accommodate structural steel column.



ABOVE GROUND—Crane hoists subway buckets from excavation beneath sidewalk. Timber frame supports underground utilities.

track level). The concourse north wall had been laid vertically in front of the sloping concrete.

Transferring the Load

Trickiest step in construction was to transfer these street-support girder loads to the bank's planned steel framework so the retaining wall could be removed. To get a toe hold it was necessary to break out the north concourse wall and cut two vertical channels down the sloping concourse face and into rock at concourse floor level to make room for structural steel columns. These columns each were to support a street girder, and also a 6-ton girder in between to which five more street-girder loads would be transferred. This 6-ton girder was 30 ft long and parallel with the curb line.

Muck from this initial work had to be carried by hand in baskets up the station's stairs to waiting trucks. And the three big pieces of steel—two columns and the girder—had to come through the station, too. Getting them in was a tight squeeze. Late at night, steel came into the station's baggage concourse on a trailer. The baggage concourse, one level above the Long Island concourse, forms a gallery that overlooks part of the latter. A crane picked up the steel pieces, one by one, and eased them over the gallery railing and down to the Long Island concourse. From there the pieces were rolled on planks to the construction site and raised to place by chain hoists suspended from street girders.

The new girder was in front of the old retaining wall supporting the street girders, so when transfer took place a length of each girder would cantilever 5 ft. Street girders were stiffened over the new girder, then wedges were inserted between the new girder and the street girders to pick up the latter's loads.

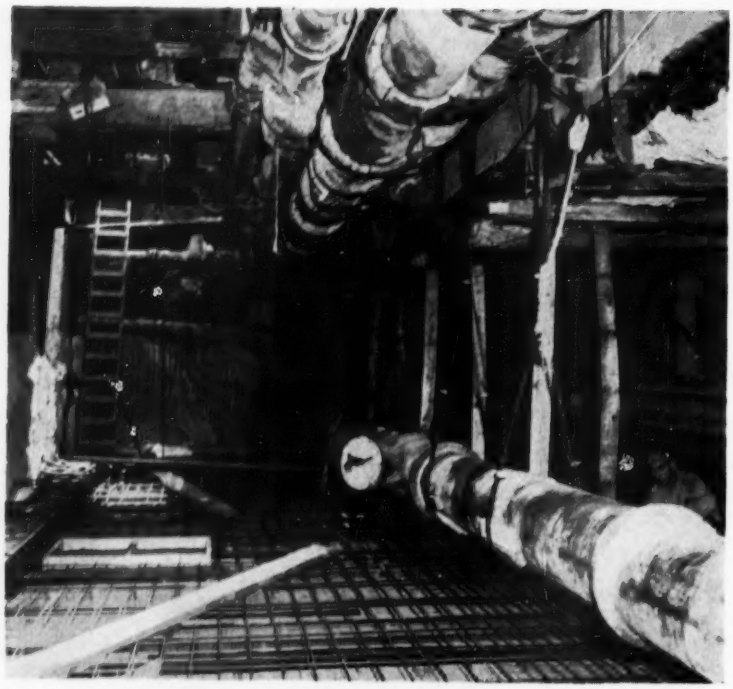
Now the retaining wall between columns could be broken out. Sixty feet of sidewalk 15 ft wide and a corresponding adjacent length of street surfacing 3 ft wide were removed to provide access from above to the whole working space. A heavy timber framework spanning the hole supported a board sidewalk with safety handrails. The frame also carried temporary hangers for utility pipes and ducts as they were exposed by the excavation.

Placing Columns

Pits were sunk through earth, concrete, and rock to make room for two columns flanking the original ones on the street-girder support line. The columns were lowered to place, and two new girders, shorter than the first one, were threaded through the breach in the retaining wall and into their places in front of the wall's remaining portions. Street-girder loads were transferred to the new



SLOW PROGRESS—careful hand digging preserves jungle of utility pipes.



READY FOR CONCRETE—Roof of banking space, 15 ft below sidewalk, is fireproofed structural steel. Electrical conduit bank is suspended on small beams on right.

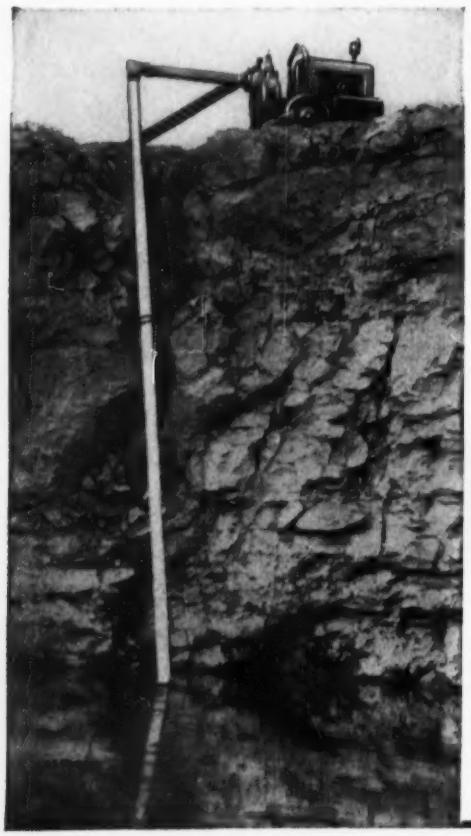
girders, and the two remaining pieces of the entraining wall were removed.

Earth excavation exposed a sanitary sewer and manhole, low- and high-pressure water mains, gas lines and concrete-encased electrical conduits, all of which had to be suspended from the temporary timber framework at street level.

Immediately below the utilities was Manhattan's firm foundation—bedrock. When the job began, blasting was not permitted. Old buildings on one side, hurrying commuters on the other, and trains a short distance below were deemed in jeopardy from blasting, no matter how little powder might be used. The only method available for breaking rock was plug-and-feathers.

Progress was discouraging. A waiting truck crane brought up barely enough subway-bucket loads of broken rock to fill half a dump truck in a day.

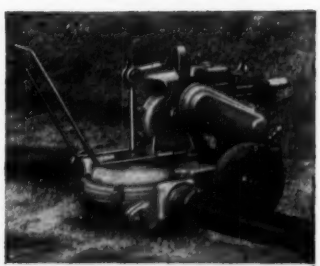
Eventually, permission was obtained to try a half-stick of 40% gelatin at a time—hardly worthy



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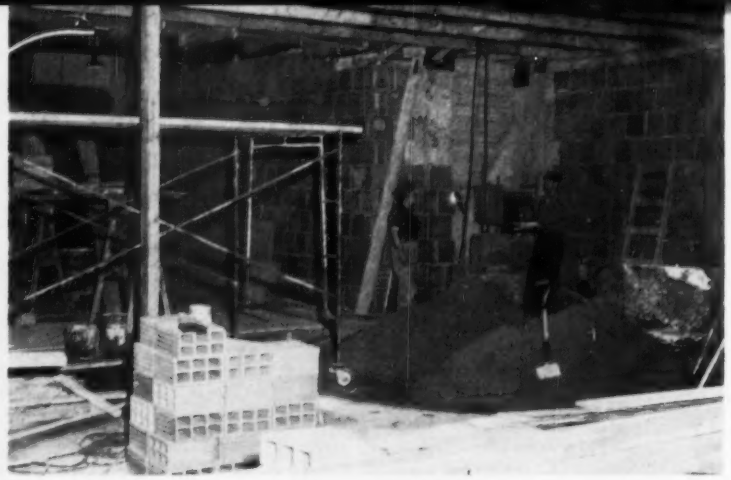
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TUNNEL EXCAVATION ...
continued

of the attention of seasoned Manhattan powdermen. But production stepped up to as much as 30 yd a day. Despite disquieting rumblings above Pennsylvania Station's accustomed roar, no mishaps ensued that were more serious than a few magazines knocked off a nearby news stand. In all, 2,500 half-stick blasts were set off.

Charges were set an average of 2 ft deep and covered by blasting mats. Aside from dust-collector equipment, regularly required for drilling in New York, no special ventilation procedures were necessary. Gas lines, however, were shut off by the utility company.



TILE WALLS—Hollow tiles hide excavated rock surface surrounding banking space.

Drilling was mostly by jack hammer, although a wagon drill was brought in when sufficient headroom was established. Seaminess in the rock was blamed for up to 3 ft overbreak in some places, making it necessary to build 8-in. brick walls and backfill with masonry, rather than to parge the cut rock surface as had been specified.

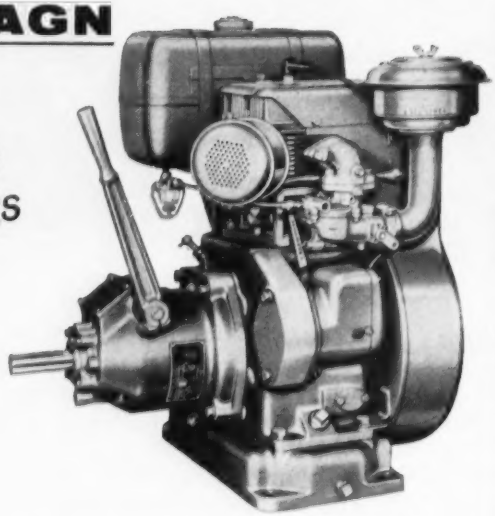
Last Stages

Only when excavation was complete and the sub-basement wall broken through (thus providing the new building site at last) was it possible to step up the rate of construction. Steel columns were set adjacent to the north building line on 33rd St.; the bank's roof-slab and front-opening beams were erected and sheathed in fireproofing and roofing concrete, and the space was ready for the building trades to take over and dress it up for bank operation.

Atop the slab, membrane waterproofing was applied and a new concrete wall was raised under the curbline. Utility lines were supported from underneath; surrounding space was backfilled, and a new concrete sidewalk and asphalt pavement were placed.

Gibbs and Hill, Inc., New York, designed the job and participated in construction supervision. The writer was project engineer for Gibbs & Hill, with Walter W. Wefferling as chief architect. Charles Saladino is president of Salson Construction Co.

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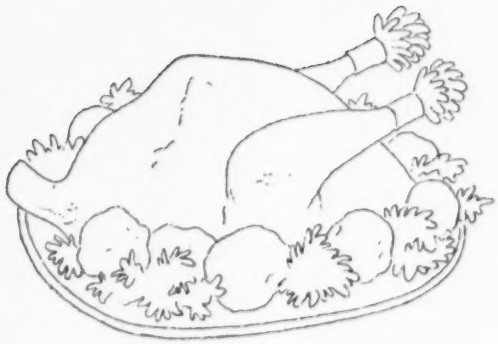
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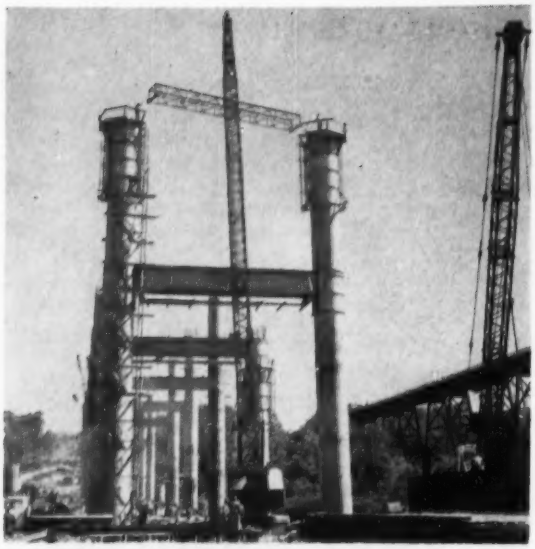
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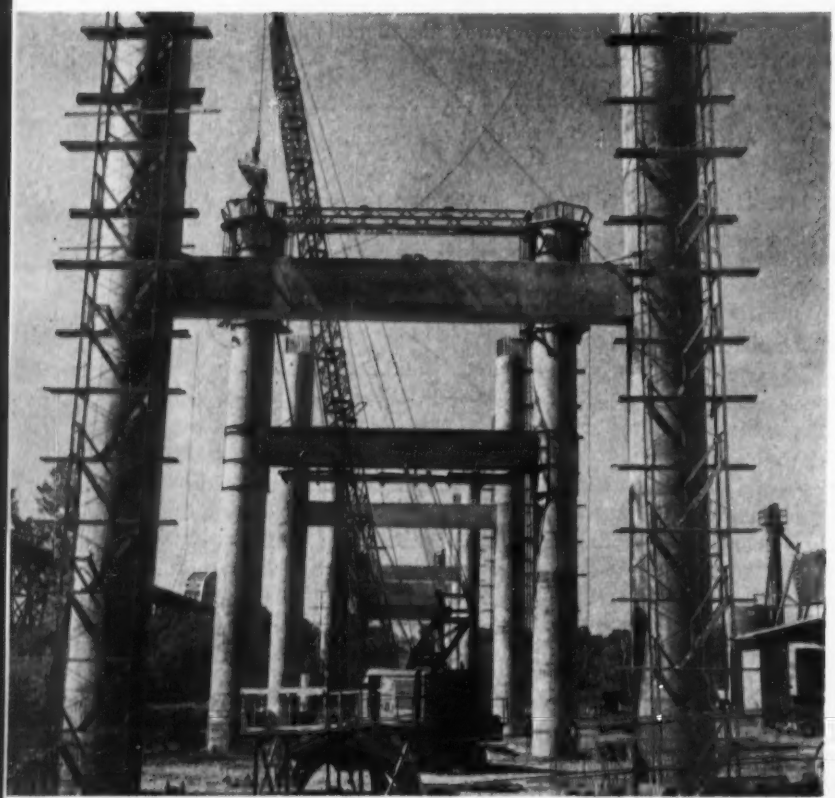


CONSTRUCTION STRUT—Temporary box-truss bridge is placed between two shafts to maintain alignment during pouring.



SAFE FORMS—Each 20-ft-high section of circular steel forms is equipped with ladders and circular platform.

Steel Forms Cut High Pier Costs



HIGH POUR—Crane with 180-ft boom swings concrete bucket over shafts 135 ft high. Note full-height stair scaffold.

HOW DO YOU PLAN a job that calls for the construction of 42 bridge piers towering 135 ft high?

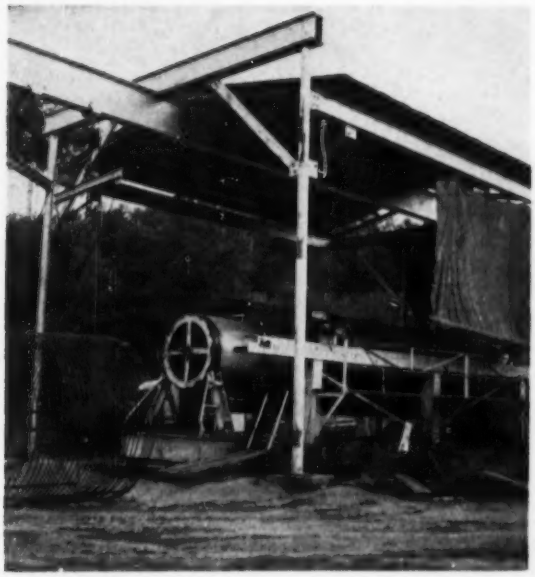
The problems are interesting. How do you place concrete that high? What kind of forms will be most economical? How will they be handled? What can be done to protect workers who must scale such dizzy heights?

These are the questions that Arthur A. Johnson Co. and Peter Kiewit Sons' Corp. faced on a new Hudson River bridge south of Albany, N. Y. The 4,000-ft span will carry the Berkshire section of the New York Thruway across the wide river between Castleton and Selkirk. And because most of the span cuts over a wide flood plain between two ridges, it requires many high piers.

But thanks to the consultants, Madigan-Hyland, the non-tapered circular pier shafts lend themselves well to efficient form design. Johnson-Kiewit is handling the job entirely with Blaw-Knox steel forms. And they're doing a fast, economical job.

The forms are easy to install and strip, produce a smooth surface on the concrete, and offer a large number of reuses. However, to keep the job on its tight schedule, Johnson-Kiewit has to





SPIRAL CAGE MAKER—Steel reinforcing spirals for columns up to 8-ft in dia are made on special rig. Long rotating drum wraps a reinforcing wire in spiral as wire passes through feeder that travels alongside on roller-chain track.

pour often. And this requires plenty of forms. If it were not for the speed required, the contractor could reuse the forms many times more than the estimated 27 times.

Except for two piers with three shafts, all the 42 piers are twin shaft bent-type piers with a strut about half way up and a cap on top. Most shafts are 8 ft. in diameter. Those at the two main river are 14 ft 6 in. Two 14-ft adjacent piers support the anchor arms of the cantilever. A few shafts of the short piers near the abutments are only 7 ft in diameter.

Pouring Plan

Johnson-Kiewit's pouring plan is based on handling 20-ft lifts. Semi-circular form sections 5 ft high are bolted together when they arrrive on the job, assembled in 20-ft sections, and handled that way as much as possible.

The contractor purchased enough forms to make eight pairs of 20-ft high sections. Also, for each pair of main piers, they bought one 20-ft section. Extra units were purchased of the special collars that support strut and cap forms.

Generally, the pair of twin shafts for each pier are built up at the same time so that struts and caps can be poured as soon as possible. When the footings are completed, 20-ft high sections of form are placed on top and plumbed carefully with guys.

Because of the contractor's insistance on safety, workers have no trouble moving about the forms. Each unit has a sturdy caged ladder attached on either side along the seam. The entire top of the form is surrounded by a circular platform, supported by steel brackets bolted to the protruding flanges at the horizontal joints between form sections.

Brackets serve also to mount a hand rail that surrounds the top platform. These modifications represent some of the most significant advances in steel pier forms. They permit the worker to move quickly about the form, yet they reduce accident hazards.

When the form is positioned, a spiral reinforcing cage is lowered inside. The final operation is placing four anchor bolts near the top of the form to create inserts that will support the bolts on which the form will rest when it is raised for the next lift.

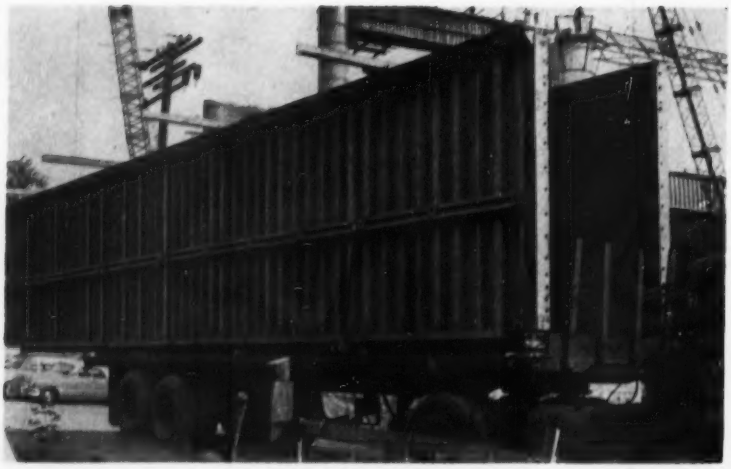
Forty hours after the pour, the form can be stripped. It's a fast operation. Bolts are loosened—but not removed—along both vertical joints. When the bond is broken, a crane hoists the form and holds it until four bolts and their shelf angles are anchored into the inserts near the top of the previous lift. Then the form is lowered in place.

After the first lift, the twin-shaft forms are tied together with a steel truss bridge. This assures proper spacing, simplifies transverse plumbing, and provides a bridge between the two shafts.

Instead of two transverse guys on each shaft, only one is required because the bridge transmits all plumbing adjustments of one shaft to the other. And it also allows both guys to be anchored between the two shafts instead of outside where they could disrupt traffic and block yard movements. Longitudinal plumbing is done with two guys on each shaft.

The forming operation is repeated throughout the 135-ft height of the shaft with a few modifications at the strut.

One of the key features of the steel form is that it eliminates the need for large and expensive cross girders to support heavy strut and cap forms. With the Blaw-Knox system, a 22-ton steel cap form is carried entirely by the 5-ft high circular steel segments that previously served as the tops of the lower 20-ft forms. However, they are not standard segments. They are equipped with a shelf on which the beam form lands. And they are anchored to the concrete with four 1¼-in. bolts, serving as anchorage collars. Above each collar, another special segment is designed to frame into

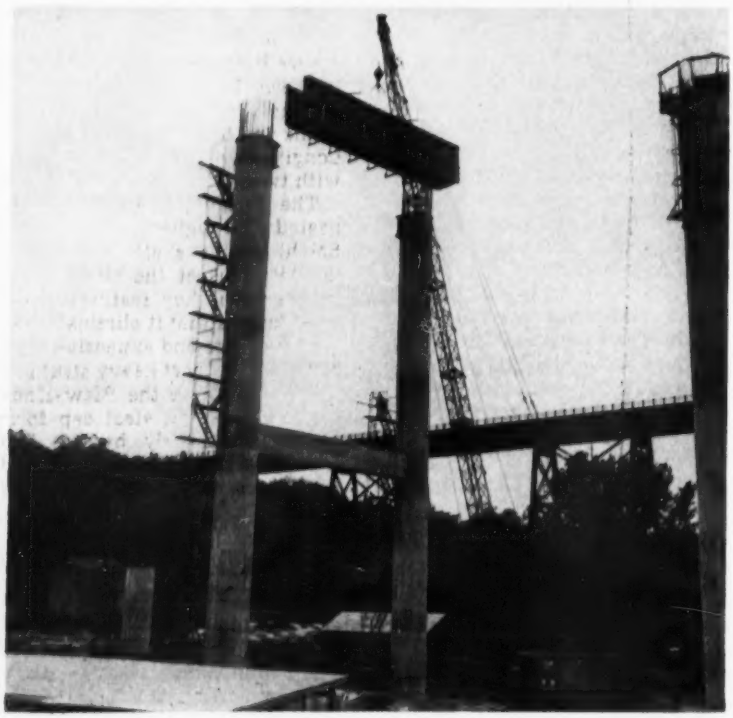


HAULING CAP FORM—Huge 22-ton steel cap form is carried on trailer from one pier to another. Heavy section will be placed directly on forms of previous lift.



TELEPHONE SIGNALS — Foreman on ground, crane operator, and man on top of shaft communicate by telephone to direct hoisting of cap form 135 ft high.

HIGH LIFT—P&H crane with 160-ft boom hoists cap form as teams of men pull on lines to prevent excess swinging. Then, crane travels forward and lowers form.



HIGH PIERS . . .

continued

the end of the strut form so that shaft and strut can be poured monolithically.

This strut form and its anchorage collar must be left on for nine days before stripping. But other segments of form below the collar are dismantled and reassembled above the strut to continue pouring of the shafts.

Cranes handle just about everything on the job, and it takes a fleet of 17 of them to keep pace with the tight schedule. Generally, the contractor positions a crane with a medium length boom between two piers and operates it there until the reach becomes too high. Then he moves it to another position and replaces it by a crane with a 160-ft boom.

The toughest picks on the job are the 22-ton strut and cap forms. They take a lot of coordination among operator, foreman, ground crew, and pier crew. On a cap form, for instance, the crane remains stationary as it hoists the 22-ton unit 135 ft high. Two slings and a three-part line lift as two ground crews pull on lines to keep the form from swaying. When the big unit is raised high enough, the crane slowly travels forward to move the form over its supports. Guided by telephone from men on top of the pier and on the ground, the operator lowers the heavy unit until it lands in place. Its huge prefabricated reinforcing cage is handled the same way.

Strut forms can be removed intact and lowered to the ground with a pair of long slings hung from one of the crane's hoist lines. Or the two hoist lines can be operated simultaneously with normal slings. The form for the cap beam must be dismantled before removing.

Batched in Erie plants, one on each side of the river, concrete is mixed in a fleet of 11 batch trucks and hauled to each pier. The trucks chute the mix into 3-yd Gar-Bro lay-down buckets which are swung over the forms by crane. Elephant trunks carry the mix into the form where it is consolidated with Homelite high frequency vibrators.

Plastiment additive densifies the mix and retards the set to produce smoother and stronger concrete. The retarder, however, prolongs the time of full hydraulic pressure on the forms—an-

With 30 to 50% fewer moving parts, the Allis-Chalmers diesel in this shovel...



...puts more power to work digging and loading

THERE IS UNUSUAL SIMPLICITY in Allis-Chalmers engines. The Allis-Chalmers diesel in the shovel shown working above, for instance, *has 30 to 50 percent fewer wearing parts than competitive engines!*

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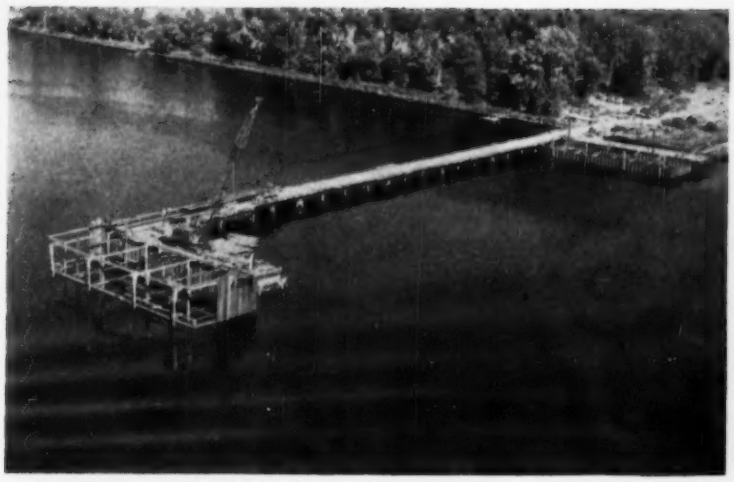
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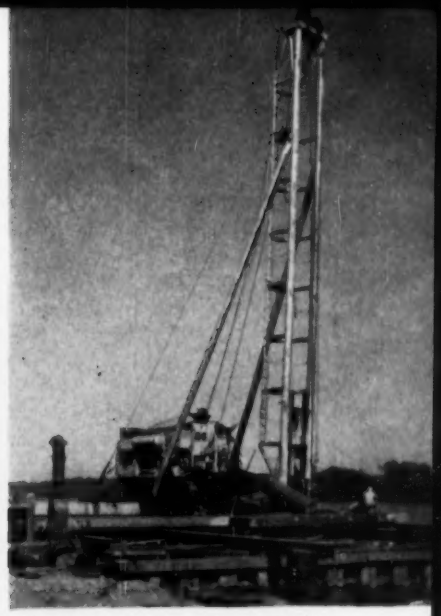
Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1957, The Firestone Tire & Rubber Company



TRESTLE SERVES COFFERDAM—Lima crawler crane operating on timber trestle places steel sheeting around templet at main river pier. Trestle eliminates floating rigs.



DRILL RIG—Drilled-in caissons are driven into sloping bedrock to support main pier.

other good reason why the contractor chose steel.

Another safety device that is paying off for Johnson-Kiewit is a simple stairs erected alongside each shaft and extended as the shaft is built up. Instead of moving men around the forms by crane or forcing them to hang precariously by belts, the contractor offers the safety of a high stairs lashed to the form. It is made of simple wood stair units mounted inside a Safeway scaffold.

Foundation work for the bridge's 42 piers has been simplified considerably by the presence of three islands along the span's centerline. Except for an outboard-motor-powered skiff, there isn't a floating rig on the job. The job is handled entirely by cranes, working either on the ground or on trestles.

All piers are on piles, except for the two main piers and about 10 small piers in the creeks between islands. These rest on bedrock. The others are on open-end pipe piles ranging from 20 to 90 ft long, 14 or 16 in. in diameter, with a ½-in. thick wall.

In the creeks, cellular sheet pile cofferdams are driven 25 to 50 ft to rock, excavated, and sealed with about 4 ft of tremie concrete. The rest of the foundation is completed in the dry.

At the main channel, plans located one main pier at the west shore line and the other several hundred feet from the opposite shoreline on one of the islands. The east anchor pier is also in the river, about 50 ft from the same shoreline.

The channel separates the contractor's operations in two parts. There are no bridges nearby on which materials can be transferred, so many similar facilities and equipment had to be set up on each side.

Trestle

To eliminate the need for floating equipment, Johnson-Kiewit built a timber trestle from the east shore to accommodate trucks and crawler cranes. The trestle extends several hundred feet into the river with right-angle legs running parallel to each of the two big piers.

Working on the outer leg, a Lima crane handled most of the cofferdam work. Its first job was to drive a frame of 16 timber piles to support a steel templet around which sheet piling could be driven.

Piles were positioned in pairs so that struts could be bolted across to support the 30-in. steel beams of the templet. When the templet was completed, the supporting struts were removed and it was lowered by 16 chain falls mounted on the tops of the piles. Here it was landed on to another group of struts and held there while another frame was assembled about 10 ft above. When the two frames were braced and tied together, Amerlux Z-type sheets 55 ft long were driven around it. And later, the entire 60-ton unit was lowered about 17 ft below water and tied to the sheet piling to serve as internal bracing during unwaterings.

There are no piles in this main pier. The cofferdam is excavated to bedrock, then sealed with tremie concrete. After dewatering, a distribution block is poured on the seal to support the twin concrete shafts.

Construction of the opposite main pier at the west shore is similar except that it rests on 28 drilled-in caissons. Bedrock under the foundation slopes at a 45-deg angle, and it is necessary to anchor the pier with 30-in. dia caissons.

Western Foundation Co. is driving caissons 36 to 80 ft long with a converted Bucyrus-Erie churn-drilling rig. Caissons are first driven through overburden and hardpan to the sloping bedrock. Driving is continued until the entire tip of the caisson seals itself into the rock surface. Then a churn drill and bucket device work alternately to clean out the inside of the caisson. And when this is done, another churn-drill bit is dropped into the long caisson to cut a 5-ft deep socket in the rock.

After an inspector makes a visual check of the socket and assures that the rock is sound, the contractor builds up grout in the lower part of the caisson, then drops in a 12-in. H-beam ranging up to 72 ft long. These beams are filled with grout. They serve to transmit loads into the rock. Above the grout, reinforced concrete is built up to complete the caisson.



A single drop of used oil from this truck indicates true condition of the vehicle's oil . . . and tells a lot about the engine's operation.



Daily oil checks assure maximum lubrication efficiency in this diesel locomotive.

Now—they're testing used oil in minutes

THE NEED for a fast, accurate and practical method for determining the condition of used oil has long been one of the more serious problems confronting fleet operators. It's obviously wasteful to discard still-good oil, but operating a vehicle with contaminated oil could lead to costly engine damage. This was an unsolvable condition which maintenance men had come to accept.

Since no two vehicles, even of the same make and model, are identical in performance or operation, maintenance men were compelled to compromise on oil change "averages" recommended by engine manufacturers. This procedure is uncertain and costly. Fortunately, this operating conflict has been resolved with the introduction of a simple but completely reliable oil check system . . . the Shell ADC Oilprint Analysis.

The ADC Analysis was primarily conceived to determine proper oil change intervals for individual engines. However, it goes much further. It is capable of actually reducing engine maintenance costs by disclosing certain mechanical defects *before* they have caused serious engine damage.

The test procedure is very simple . . . requires little practice to perfect . . . and provides a reliable check of oil from merely two drops of used oil. In minutes, the degree of *A*lkalinity, *D*ispersancy and *C*ontamination can be determined easily.

Here are several typical examples from various areas of the country. They show how fleet operators, employing both diesel and gasoline engines, have successfully and profitably applied the ADC program.

A Kansas City Freight Line

Operating a large fleet of trucks, one Kansas City freight line previously had drained and replaced oil every 3,000 miles. After adopting the ADC Oilprint Analysis, individual test charts showed that, in most cases, drainage would not be necessary at less than 6,000-mile intervals. Even at this doubled interval, engine life was not affected. Further proof was established when these engines were inspected at 87,000 miles and no appreciable wear was found on bearings, pistons, rings or valves.

An Idaho Logging Operation

Oil had previously been drained after a limited number of hours of use on an Idaho company's diesel locomo-



Substantial oil economy is realized in this tractor, because oil is changed only when indicated by the Oilprint.



Taking a quick "fingerprint" of crankcase oil from an interstate carrier.

tives. With the ADC Oilprint Analysis as a guide, the oil-change interval has now been safely increased manyfold. The savings made possible by this on-the-spot test in oil, filter change and labor costs were considerable. Furthermore, leaky head gaskets are frequently discovered before any serious engine trouble develops. Here is another valuable plus for the ADC Oilprint Analysis.

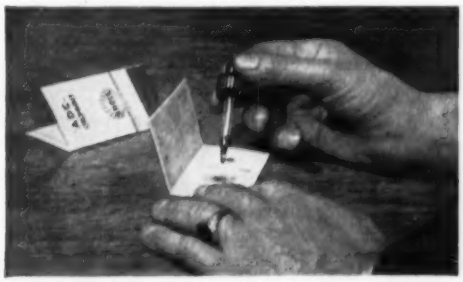
A Washington, D.C., Transit Company

This transit company operates a large fleet of buses with both gasoline and diesel engines in use. With the difference in operating schedules . . . rush hours, short and long hauls, around-the-clock schedules . . . both engine types were believed to require complete oil changes every 2,000 miles. When the ADC program was instituted, the tests showed that oil-drain periods and minor maintenance checks could be safely extended to every 3,000 miles for gasoline engines and 4,000 miles for diesel engines.

Fleet operators, who are concerned with extending the service of crankcase oil and avoiding the risk of using contaminated oil, are invited to sit in while a Shell service engineer demonstrates the time-and-money advantages of an ADC Oilprint Analysis program.



Photo shows an oil-spot test card . . . one phase in the visual life record of a change of oil.



One drop of a special indicator* fluid developed by Shell checks the alkaline reserve in the oil.

*Indicator Fluid U.S. Patent No. 2,770,530

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SHELL

Third Parties Also Have Rights



A NEW LIABILITY—Contractors have learned to insure sponsor's Hold-Harmless clauses, but now they must protect themselves against legal actions by unsuspected Third Parties.

By JAMES L. MIDWINTER
Liberty Mutual Insurance Co.

MOST CONTRACTORS are only too familiar with Hold-Harmless clauses, those irritating phrases in a contract that require the contractor to assume a greater degree of liability than the law demands.

The contractor has learned to live with these Hold-Harmless clauses—they are generally the price he pays to get a job—and to protect himself by endorsing his general liability policy with a Contractural Liability clause.

But with more and more public funds being spent for roads and other types of construction, many a contractor is unwittingly signing agreements with city, state, or federal governments that contain a type of Hold-Harmless clause that is not covered either by a General Liability policy or by a Contractural Liability endorsement.

This hidden Hold-Harmless clause has come to be known as a Third Party Beneficiary clause, and the number of actions brought against contractors under this clause have skyrocketed in the past few years.

The two types of Hold-Harmless clauses with which the average contractor is familiar are the limited form, which merely says that the contractor will indemnify the owner for loss or expense incurred by the owner through the negligence of the contractor; and the broad form, which states that the contractor will assume liability even for the owner's own negligence.

In both cases, Contractural Liability coverage is available to protect the contractor against the extra liability he assumes by signing the contract.

This is not the case with Third Party Beneficiary clauses. Unlike the limited or broad form of Hold-Harmless clause, a Third Party Beneficiary clause assumes that the contract has been signed not only for the benefit of the two parties signing it, but also for the benefit of some third party or parties.

Operating on the principle that a governing body must protect

Typical Hold-Harmless clause:

"The Contractor will indemnify and save harmless the Owner against any liability, loss, or expense incurred or suffered in consequence either of bodily injury to any person or damage to any property due to any act or omission of the Contractor or any of subcontractors . . . in connection with the work of the Contractor hereunder."

Broader Hold-Harmless clause:

"The Contractor hereby assumes entire responsibility and liability for any and all damage or injury of any kind . . . caused by, resulting from, or occurring in connection with the execution of the work provided for in this contract . . . and if any person shall make a claim for damage or injury . . . whether such claim be based upon the Owner's alleged active or passive negligence or participation in the wrong or upon any alleged breach of statutory duty or obligation on the part of the Owner . . . the Contractor agrees to indemnify and save harmless the Owner . . . and to assume on behalf of the Owner the defense of any action at law or in equity . . . and to pay on behalf of the Owner, the amount of any judgment that may be entered against the Owner in any such action."

And now a "Third Party" clause:

". . . the Contractor shall bear all damages however caused to property resulting from his work under the contract . . . and in case of injury done . . . in consequence of any act or omission on the part of the contractor, the contractor shall make such repairs as are necessary . . . at his own expense."

Move Earth at Lower Cost Than Ever Before!



JOHN DEERE 820 *DIESEL* TRACTOR

and Hancock 8-Yard Elevating Scraper

YES, it's true! Whatever your job—performance records show that you can move more dirt faster than with any other unit of equal bowl capacity.

The John Deere "820" Diesel Tractor with its 67 engine horsepower is a proved economy leader. It pulls the 8-yard scraper for only pennies per hour.

Independent "live" PTO drives the scraper elevator to lift the dirt from the blade into the bowl—the big reason why you move more dirt with less horsepower. There's no need for expensive auxiliary pusher power.

Two hydraulic circuits are used—one to raise and lower the blade, the other for dumping and spreading. A low-cost, heavy-duty, fast-working unit you will want to investigate. See your John Deere industrial dealer.



"We Load, Elevate, and Spread 80 to 150 Yards per Hour"

My business is moving dirt, mostly in highway construction. The John Deere Tractor and latest Hancock industrial scraper opened our eyes to what we believe to be the ultimate in loading, elevating, and spreading dirt. We have worked in everything from blown sand to what have you. I heartily recommend this advanced designed equipment to any contractor or individual with a dirt-moving problem.

. . . *Ed Lively*
Roswell, New Mexico
Contractor

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JOHN DEERE Industrial Tractors and Equipment

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Mining Gold in the Black Hills

That's Bethlehem Hollow Drill Steel biting into hard, tough pre-Cambrian schist in the Homestake Mine at Lead, South Dakota—the largest gold mine in the western hemisphere.

The Homestake Mine, operated by Homestake Mining Company, has been active since 1877. It is now about 5600 ft deep, and has 25 working levels. Because of the hardness of the rock, drilling is extremely difficult. The cut and fill method is employed, with rock tailings used for fill. Bethlehem Hollow Drill Steel, fitted with carbide-insert bits on 7/8-in. hexagon rods, is widely used throughout the workings. It's been giving an excellent account of itself, too. Reconditioning is done top-side, in Homestake's modern shop.

Bethlehem Hollow Drill is economical for all kinds of rock drilling jobs because it is rolled from fatigue-resistant steel, and has a uniform hole, centrally located in the bar. It also has a wide quenching range. Moreover, it is easy steel to heat-treat for the proper balance of toughness and wear-resistance, making possible long-wearing threads and strong shanks.

Bethlehem Hollow Drill Steel comes in Carbon and Ultra-Alloy grades in rounds, hexagons and quarter-octagons. It is regularly furnished in lengths of from 18 ft to 27 ft, though longer lengths can also be supplied. Specify Bethlehem Hollow the next time you order drill steel.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM HOLLOW DRILL STEEL CARBON AND ULTRA-ALLOY

BETHLEHEM STEEL

the person and property of its citizens, governments—city, state, or federal—will often write into the contract a phrase similar to the following:

". . . the Contractor shall bear all damages however caused to property resulting from his work under the contract . . . and in case of injury done . . . in consequence of any act or omission on the part of the Contractor, the Contractor shall make such repairs as are necessary . . . at his own expense."

This may sound like the responsibility the contractor normally assumes under the law—but it is not.

A third party can interpret this wording to mean that the contract has been signed for his benefit as a private citizen, as well as for the parties named in the contract. He needs only to establish that damage or injury to him or his property had a casual relationship to the contractor's operation. He does not need to prove that the contractor was negligent.

As an example, consider the recent case of a road contractor who was awarded a contract by a small municipality. The contract contained the Third Party Beneficiary clause. During the course of his work the contractor set off a routine blast. The blast was completely controlled; it was set off without violating local codes; and it caused no physical invasion of nearby property.

However, a well that supplied drinking water for a resident did go dry, presumably as a result of the blast. The resident brought legal action against the contractor under the Third Party Beneficiary clause. He claimed that he as a citizen, was entitled to benefits arising out of the contractural agreement between the contractor and the municipality.

The citizen won his case without having to prove that the contractor was in any way negligent. The contractor's Contractural Liability endorsement did not cover this contingency.

While Third Party Beneficiary clauses usually are found in public contracts, they are by no means limited to these contracts. A private owner can, and sometimes does, insert a clause into a private contract to protect his neighbors. When he does this, he assures his neighbors that they can bring suit against the contractor for damage they may suffer without having to prove negligence.

A review of a General Liability policy as well as the Contractural Liability endorsement will show that they each contain an exclusion that denies coverage when a suit is brought against the contractor by a party who alleges that a contractural agreement was made for his benefit, even though he is not a party to the contract.

Can insurance for this type of exposure be purchased? Usually, yes. But it is important that the contractor's insurance representative go over a job contract carefully with the insurance company underwriters before it is signed.

If the underwriters decide that the phraseology of the contract is sufficiently broad so as to permit a Third Party Beneficiary action, the premium for coverage will be determined by the increased exposure the insurance company is asked to underwrite.

Dumpcretes help link New York State Thruway and Garden State Parkway



A 2½ mile section of 4-lane divided concrete highway linking the New York State Thruway with the New Jersey Garden State Parkway was completed by George M. Brewster & Son, Inc., using seven Dumpcretes to handle 30,000 cu. yds. of concrete from portable plant.

SEND FOR FIELD REPORT ON THIS JOB

Dumpcretes can reduce:

Capital investment in equipment • Confusion at paving site • Downtime and labor costs • Wide shoulder maintenance.

Dumpcretes can give you:

Lower operating costs • *Flexible* delivery to paving site *and* structures • Closer quality control • Better production.



MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division
2600 Far Hills Building, Dayton 9, Ohio 25

Please send me new Dumpcrete Field Report.

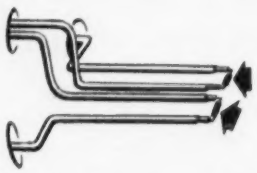
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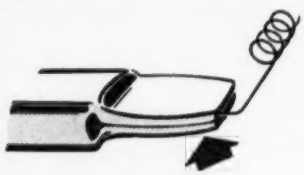
All-Glass C.I.M. Floodlamp

for Construction and Industrial Machinery

LONGER SERVICE LIFE—New C.I.M. Floodlamp is designed for rough duty on such equipment as bulldozers, graders, scrapers, crawlers and other road-building, mining and construction machinery.

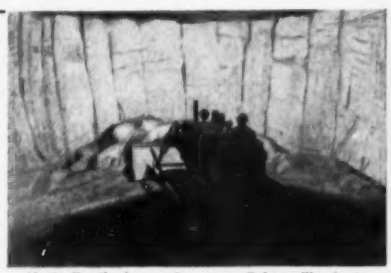


G-E's new C.I.M. Floodlamp features two single coil filaments in series, instead of one. They are shorter, so they have extra strength. Available in 12 and 24-volt.



The sturdy filaments in these new floodlamps are not welded to the lead-in wires. Instead, they are clamped in a vise-like grip for added resistance to breakage.

BEAM DESIGNED TO FIT THE JOB — Lens-reflector combination is designed to give a broader beam spread —vertically and horizontally. You get more light right where you want it.



Vertically, the beam gives more light to illuminate the entire work area.



Horizontally, the beam pattern is smooth . . . you get a more even distribution of light around the machines.

DOES NOT GROW DIM— G-E C.I.M. Floodlamps are all glass, one-piece units . . . so air, dirt and moisture can't get in. Reflectors never need cleaning.

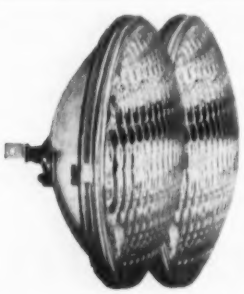


Glass Reflector Fused to Glass Lens

And because these lamps have a hard glass reflector fused to a hard glass lens, they won't crack from splattering by rain or snow.



G-E C.I.M. Floodlamps have no inner bulb to blacken; the whole unit is a bulb. No gaskets to leak, filaments stay in focus.



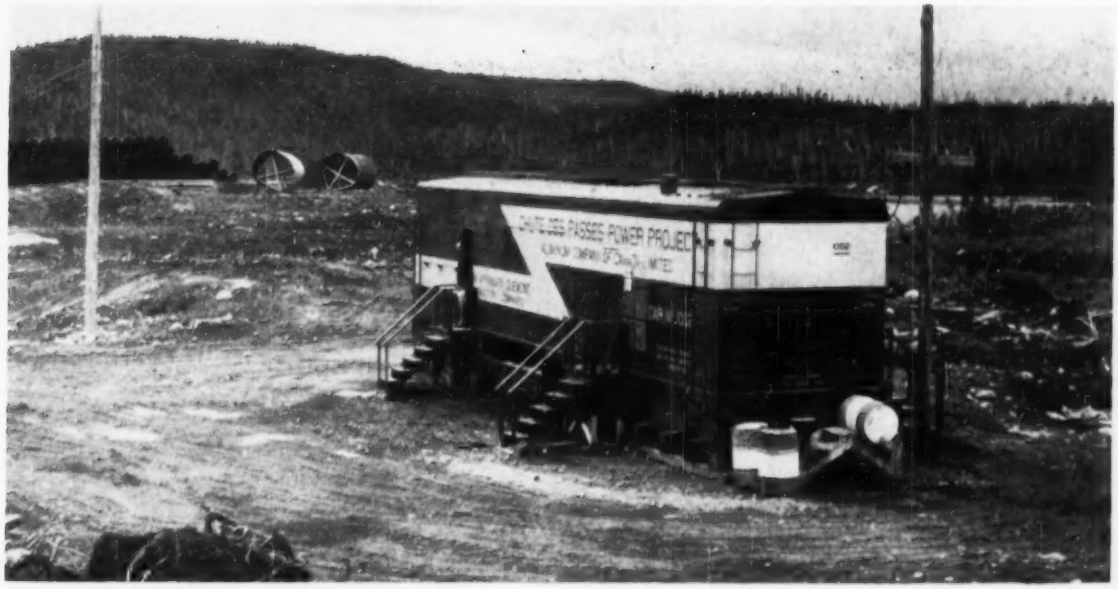
SPECIFICATIONS FOR G-E C.I.M. FLOODLAMPS
(PAR-46 Bulbs—2 contact lugs)

G-E No.	Circuit Volts	Watts	Bulb Dia.	Designed Life
4078	6	50	5¾″	500 hours
4478	12	60	5¾″	500 hours
4578	24	60	5¾″	500 hours

For best results, lamps should be used in shock-mounted housings. General Electric makes a full line of all-glass sealed beam lamps for construction and industrial machinery. For more information, contact your nearby G-E Lamp Distributor or write: General Electric Co., Miniature Lamp Dept. CME-117, Nela Park, Cleveland 12, O.

Progress Is Our Most Important Product

GENERAL ELECTRIC



POWER CAR—One of three General Motors 1,000-kw power cars gets remote Canadian job off to fast start. Each rig was disassembled and hauled 150 mi over poor road on seven trailers. Railroad wheels and trucks are replaced by timbers.

It Takes Power to Build Power

BY UTILIZING three 1000-kw mobile power cars, Perini-McNamara-Quimont, general contractor for the $135-million Chute des Passes Power Project in Canada, got off to a fast start at a job site 150 mi from a railhead and transmission lines.

Ready availability of adequate power facilities eliminated the usual problems and discomforts due to inadequate heat and light.

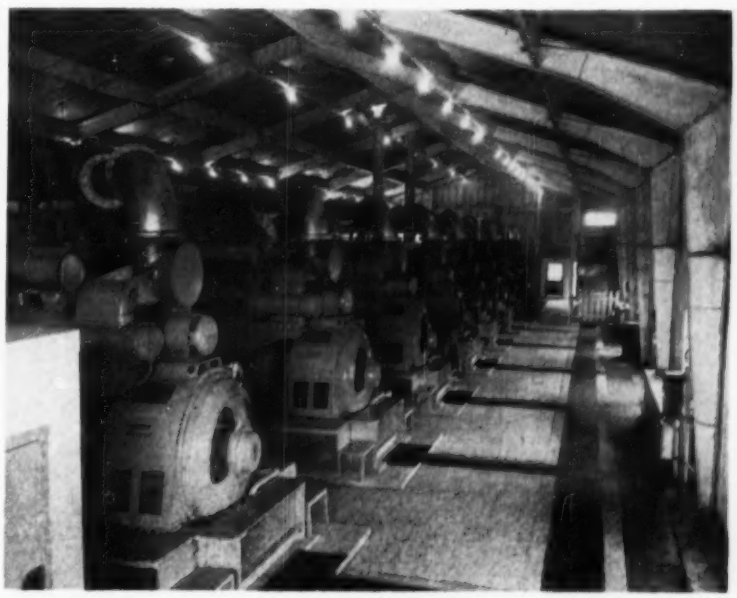
It takes power to build power—especially when the power to be built is as big as Chute des Passes. The project involves construction of a 7-mi long, 36-ft dia intake tunnel; 1½-mi, 50-ft dia tailrace tunnel; powerhouse and permanent town facilities.

Tunnel Adits

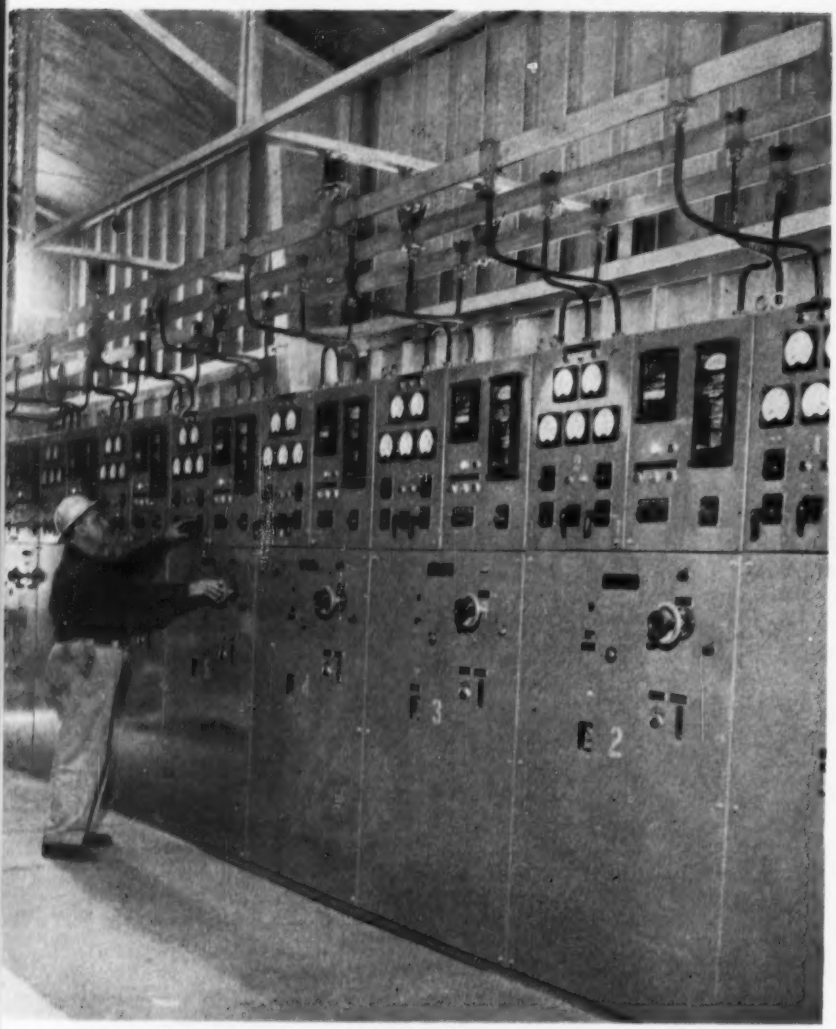
Power facilities were required immediately at three tunnel adits to operate heavy equipment and provide heat and light for camp sites. Perini answered the problem with three General Motors diesel-electric power cars. They started them in October of last year and for the next six months operated them 24 hr a day, seven days a week at full capacity.

The first of the machines arrived at Isle Maligne, the nearest railhead on Oct. 14, 1956. Assembled, the unit weighs 158,000 lb, but weight restrictions in the old logging road to the site limited passage to a trailer with a 20-ton load so it was necessary to disassemble the machine.

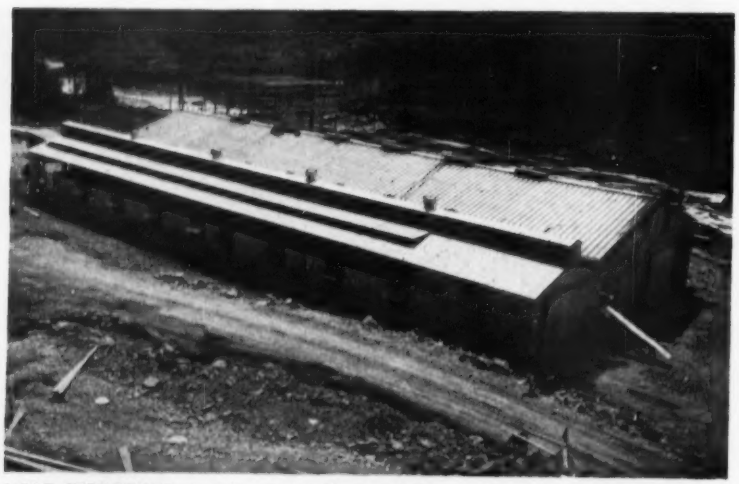
Disassembly was completed in four days, and components were loaded on seven semi-trailers and a 30-ton truck for the 150-mi trip to the site. It took 36 hr to travel the distance. At one point a river



POWERHOUSE—After mobile units operated for six months, 9 stationary diesel-electric sets were permanently installed in a central powerhouse.



CONTROL PANEL—Hans Kopp, Perini's director of operations, checks the huge control board in the powerhouse. Power is distributed by 25 mi of cable.



NEAT STRUCTURE—Prefabricated building with structural steel frame and sheet steel walls and roof houses nine General Motors diesel-electric sets.

approximately 2½-ft deep had to be forded. A D8 tractor went ahead to level the bed of the river; then each load was escorted across with the help of tractors front and back. The river crossing took almost 7 hr.

Reassembly

Re-assembly at the job site was more difficult because of the lack of handling facilities. Nevertheless, five men with the help of a 35-ton truck crane assembled the unit and had it aligned and ready for operation in less than a week. A cribbing of 12x2 timbers over 3 ft of packed gravel served as a base.

The Perini team moved the second and third mobile units to the site in the same way. The three mobile units had sufficient capacity to satisfy power needs during the early stage of the project. But to keep pace with the increasing amount of equipment and the growth of the work force, Perini construced a simple powerhouse to house nine stationary diesel-electric sets. As soon as the powerhouse was in operation, the mobile units were put on a standby basis.

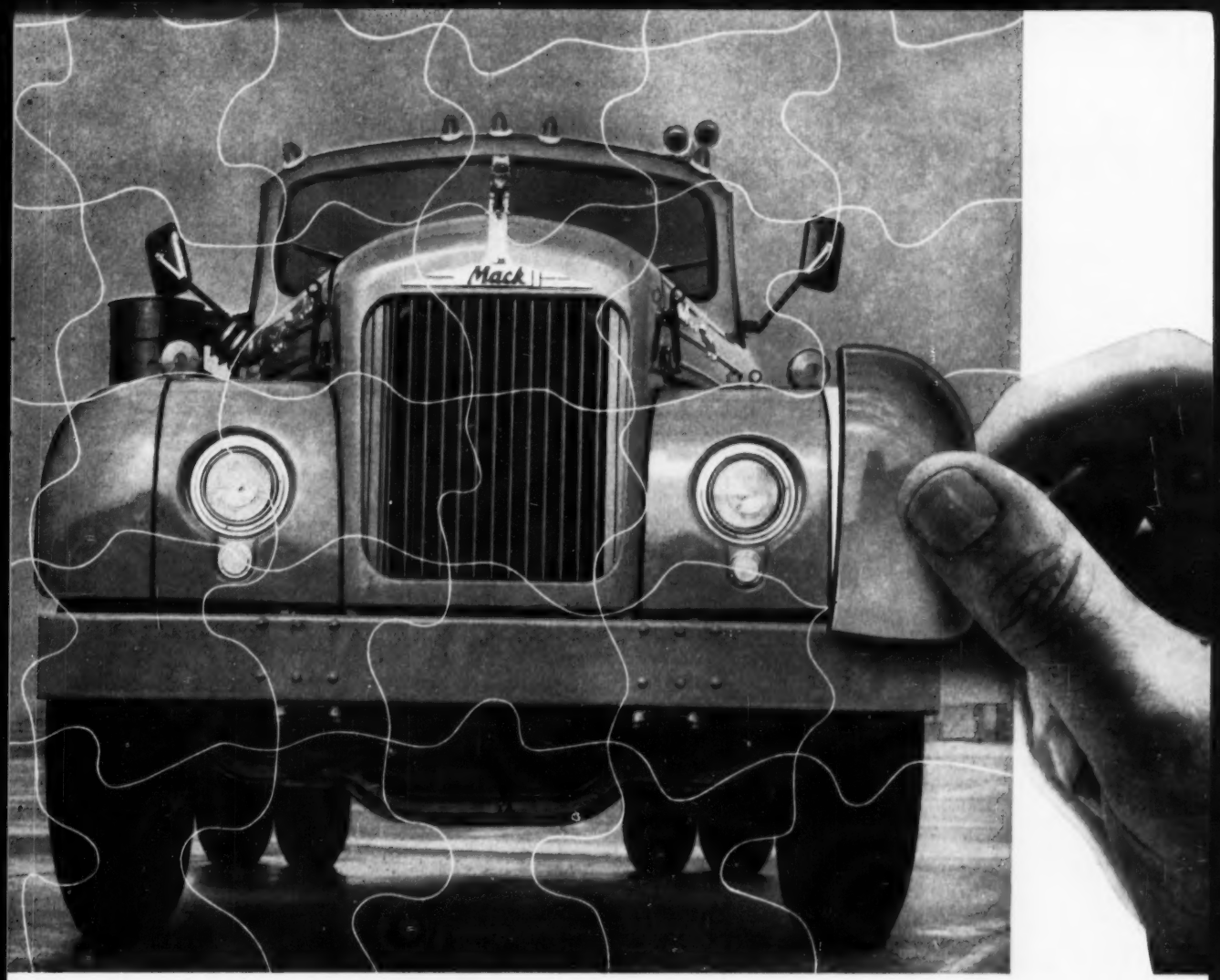
Delivering the nine units to the job site was considerably simpler. By then the road was greatly improved, and new bridges had been constructed.

All 12 of the units installed at Chute des Passes are essentially of the same basic design—standard packaged machines available "off the shelf." The difference between the three mobile units and the nine stationary machines is simply in the packaging of the components, the mounts used, etc.

When the mobile units were in full operation, each machine had an operator and an assistant. The capacity of the fuel tanks is sufficient to keep the machines operating at full load for 24 hr. The cars were refilled once a day by gravity feed on a predetermined schedule. At full load, fuel consumption is approximately 66 gal per hr.

Personnel

J. W. Liddle is the project head for Alcan and Del Cannon, vice president and chief engineer for Perini, Quebec, Ltd., represents the joint venture. Hans Kopp is the superintendent of power equipment.



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Your Mack distributor carries a carefully balanced stock of parts. Behind him are the local Mack Factory Branches and Mack's Divisional Depots—both ready for on-call action. And at Somerville, New Jersey, there's the Mack Parts Headquarters with comprehensive stocks that include every Mack part and assembly ever likely to be needed.

For emergencies . . . almost any Mack part is immediately available through the transcontinental service-and-supply network. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.



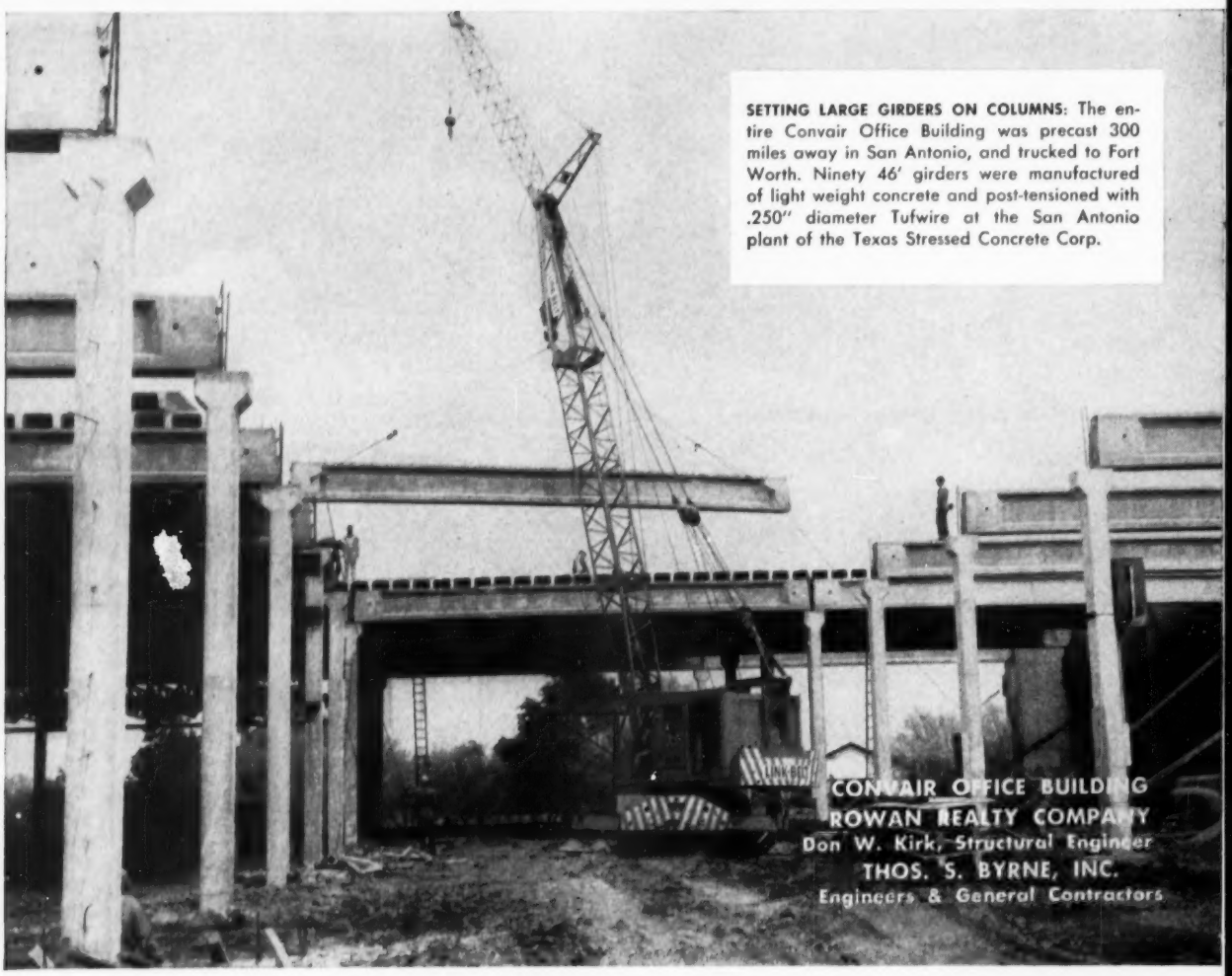
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Prestressed Concrete Building



SETTING LARGE GIRDERS ON COLUMNS: The entire Convair Office Building was precast 300 miles away in San Antonio, and trucked to Fort Worth. Ninety 46' girders were manufactured of light weight concrete and post-tensioned with .250" diameter Tufwire at the San Antonio plant of the Texas Stressed Concrete Corp.

Products Manufacture and Erection: Texas Stressed Concrete Corporation, San Antonio, Texas

Completed in 4 Months — Despite Record Rains

The rains came. For 22 days the construction business in Fort Worth, Texas, slogged through a deluge that meant delays ranging from slow-downs to shut-downs. You can't pour concrete in the rain.

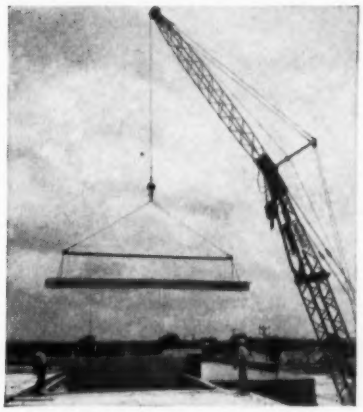
In the midst of this, an outstanding advantage of prestressed concrete construction was dramatically demonstrated — speed of erection even under adverse conditions.

The 102,000 sq. ft. Convair office building and warehouse is the case in point. The prestressed concrete structural members were erected in 13 working days — rain or no rain. The building was complete—offices, air-conditioning and all — in less than four months.

Speed of erecting is only one of many advantages that make prestressed concrete the miracle building material. Others are: great strength-to-weight ratio; less concrete needed; greater recovery after overloads; thinner sections; on schedule transportability of prestressed members; longer spans; permanence of concrete PLUS amazing flexibility and elimination of cracking; adaptability as unlimited as the imaginations of architects and engineers. Today, prestressed concrete is being used in a range of applications from fence posts to giant bridges and multi-story buildings; from movable parking lot curbs to airport runways.

Advances in the development of better high tensile strand and wire by Union Wire Rope Corporation have contributed heavily to the booming trend to prestressed construction. Once the problem of dependable tensioning materials was whipped, the way was opened wide for the "new age of concrete."

Erected In Only 13 Days



CLOSE-UP OF DOUBLE TEE BEING SET: Tuffy Slings were used as shown in placing 920 of these 4' double tee slabs. Slabs were made from lightweight concrete using Union Wire Rope "Tufwire" strand.



BUILDING ALMOST CLOSED IN: Work progresses steadily in the dreary rain as another double tee is hoisted into position. The roof structure was designed for parking. It was given a thick asphalt wearing surface.



LAST OF THE DOUBLE TEES ARE HOISTED FROM TRUCK completing roof for asphalt surface.

How Will You Share in Vast New Markets Opening For Prestressed Concrete Makers?

Looking for a new route of expansion? Want to get in on an industry that's expanding at a tremendous pace every year, with a future of fantastic dimensions? Prestressing offers opportunities not only to the on-site contractor, but also to the contractor who would like to operate a permanent casting yard as an arm of his business or as a commercial fabricator. Here are some of the opportunities:

OPPORTUNITIES in Buildings: Structures of just about every description are being built better with prestressed concrete. Office buildings, garages, warehouses, schools, motels, hospitals. Now the walls of multi-storied buildings are being poured in big slabs with openings for doors and windows, then tilted up to position. Floors are poured in "layers" separated by greased paper, then raised to upper floor levels.

OPPORTUNITIES in Bridges: The tremendous National Highway Program now under way calls for 300,000 bridges, most of which can be built much faster and more economically with prestressed concrete than with any competitive building material. Other bridges ranging from a small creek crossing to the world's longest highway bridge are built of prestressed concrete.

OPPORTUNITIES in Highways: Prestressed concrete pavement is already in the advanced experimental stage. The slabs need be only 5 inches thick, as contrasted with the ordinary 10-inch slabs used on many highways. They promise high levels of strength and permanence, speed of construction, savings in time and money. And more profit for suppliers and contractors.

These are just a few of the many uses where concrete prestressed with Union Tufwire strand and wire is proving its structural and economic advantages. Almost anything that concrete will do — it will do better when prestressed with Union Tufwire.

If you're a present user of prestressed concrete, or engaged in making it, let our engineering department and research laboratory give you and your consulting engineers a lift with any prestressing project.

If you're among those who see the big opportunity for a new plant to supply your area, let us help you explore the possibilities.

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Eimco selects Torqmatic Converter for new "105" Tractor-Dozer

IN THE "105" Tractor-Dozer Eimco introduces a new concept in earthmoving equipment. Advanced design and engineering features—such as *up-front* operator position, *two* independent final drives and *center-mounted* power unit—provide a new high in efficiency, maneuverability and traction.

And, when it comes to power, the "105" is a beautifully engineered matched team—from fan to final drives. Its Allison TC-530 TORQMATIC Converter delivers engine power instantly and smoothly—gives the "105" nimbleness and brute strength that adds up to greater push and faster work on every job.

Eimco selected a TORQMATIC Converter because the engineering facts—backed by years of experience in the most demanding applications—prove beyond question the greater efficiency and versatility inherent to the TORQMATIC design. Bring a new high in performance and efficiency to your equipment, with such cost-saving features as integral engine mounting which eliminates troublesome universal adapters—cast converter elements for longer service life and full-range horsepower—available only with TORQMATIC. Take a tip from Eimco and more than 80 other manufacturers of 122 types of road-building and construction equipment. Get the TORQMATIC story.

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis, Indiana

Allison TORQMATIC **TORQMATIC DRIVES**

BASIC RESEARCH . . .
More Practical Than You Think

This editorial, one of a special series on the importance of research to the American economy, deals with an aspect of our research program that may have serious consequences in future years — the lag in basic research.

An earlier editorial in this series noted: "The keen interest of U. S. business firms in scientific research points the way to a new kind of prosperity for our economy — a prosperity based on deliberate creativeness." As a result of the dramatic increase in industry's research expenditures, more new products will be introduced in the years 1957-1960 than in any previous four-year period.

A steady stream of new products and new processes means better values for consumers and lower costs for business. And thus it promises to sustain a high level of general prosperity that defies the old laws of boom and bust. **But, as we look further ahead, there is a danger that the stream of research discoveries may run dry because of our neglect of basic research.**

This danger was described by John Jay Hopkins, late founder and chairman of the General Dynamics Corporation: "Unless there is a revolutionary development in America of pure, not applied, science, there will come a day when there is no use in trading in your old car; because the new one is no better. The only difference between this year's television set and next year's will be the appearance of the cabinet! Scientific progress will be replaced by scientific stagnation."

What Basic Research Is

Basic (or pure) research has been characterized as the pursuit of knowledge for its own sake rather than to fulfill some practical objective. It is generally carried out in an environment which allows the investigator the freedom to follow the lead of his curiosity. The scientist in basic research, in the words of Glenn T. Seaborg of the University of California, is not concerned with "utilitarian goals, but a search for deeper understanding of the universe and the living and inorganic phenomena within it."

Impractical as basic research may seem in its initial purpose, it is an essential prerequisite to applied research and product development. A few examples will show how some of the greatest technical advances of recent years have come from basic research projects that had no immediate practical objective:

- **Radar** — an important military development of World War II with broadening commercial applications — was the outgrowth of a basic research project whose purpose was to obtain information about the height of the ionosphere, the layer of air that lies some 25 miles above the earth's surface.

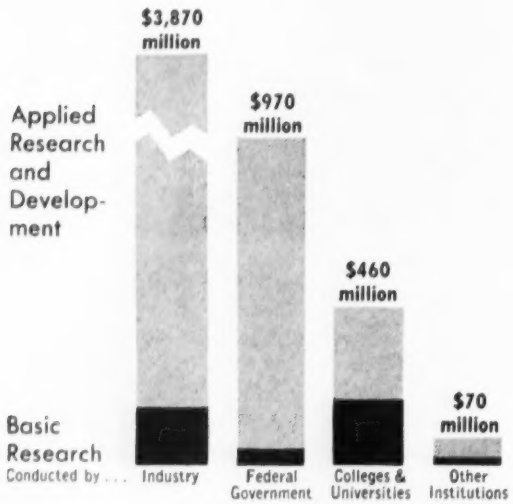
- **Transistors** — the miniature devices which are already vital components of hearing aids, pocket radios and a wide variety of industrial equipment — were invented at Bell Laboratories (research subsidiary of the American Telegraph and Telephone Company) following university investigations into the electrical behavior of solids.

- **Neoprene** — a synthetic rubber — was developed by duPont with the help of basic information provided by Father Nieuwland of Notre Dame, who discovered he could control the polymerization (the linking together of molecules) of a certain class of organic compounds.

- **Nylon** — the first of the noncellulosic synthetic fibers that have revolutionized the textile industry — grew out of fundamental research by Dr. Wallace Carothers on long-chain polymers.

continued on next page

Only 8% of All Research and Development in the U. S. is Devoted to Basic Research



Data: National Science Foundation, "Funds for Basic Research in the United States, 1953"

Industry's Stake in Basic Research

Industry traditionally has relied upon colleges and universities and other nonprofit institutions for basic research; and the U. S. has long benefited from the greater emphasis placed on basic research in Europe. It is conventional to think that business cannot, and should not, do much about "ivory tower" projects which do not have immediate practical application.

However, there is not so much in this idea as is supposed. The examples above illustrate what Caryl Haskins, president of the Carnegie Institution, has called "the widespread paradox that the most important practical consequences are commonly the least sought after." Furthermore, it is certain that, without adequate basic research, industry's efforts to produce new and better products will become progressively more difficult. And our national defense, in an age of breathtaking military applications of science, will become increasingly precarious.

In the past, our economic growth came largely through expansion into new lands or through discovery and development of rich deposits of natural resources. Such opportunities are relatively limited today. The great opportunities now lie in discovering new materials and new properties of the materials we already have. **This is the job of basic research, and industry has a vital stake in it.**

The chart indicates the tiny share of research efforts in the U.S. that is devoted to basic research. **Only 4% of all research by industry, and only 8% of all research in the U.S., during the year 1953** (the latest for which information is available) **represented fundamental research to add to overall scientific knowledge.** Even in colleges and universities less than half the research performed is basic research. At least one Nobel Prize winner has expressed the belief that we need and should work toward a doubling of the proportion of our total research effort that is devoted to basic research as soon as possible.

What Business Can Do

Without anything like a staggering increase in the total cost of its research programs, industry could do much to expand our basic research effort. Companies with big research programs should, as a matter of successful survival, be devoting a share of the effort in their own laboratories to basic research. Significantly, companies that are already doing a notable job of basic research have also made an outstanding record of translating such research into new products for industry and the consumer.

Smaller companies may rightly regard the conduct of research projects with uncertain prospects of reward as a luxury. Some basic research, indeed, never results in any tangible payoff. But, with modest contributions, small companies can still have a part in the advance of basic research. They can join together with other companies on cooperative projects. They can support basic research through trade associations and technical societies. They can help research centers in universities and other nonprofit institutions. Arrangements are available in some instances whereby business firms can pay a fee to have access to work done by university researchers.

One way or another, it is up to private business firms to see that basic research moves forward. By doing so they will be laying the groundwork for the development of the new products and technology on which their growth, and the growth of the economy, depend.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

find the *profits* in the *tough jobs* with a *BIG* LORAIN-85A



Wig-wagging a heavy-duty 3-yd. dragline bucket at the end of a 70-ft. boom, as shown in this picture, requires a machine with plenty of guts . . . lots of power, lots of endurance, lots of production . . . and that's why a Lorain-85A was chosen. Here are more reasons why Lorain-85A's measure up so well on all kinds of high-pressure, extra heavy-duty jobs — and why they can produce more profits for you!

MORE POWER — An abundance of power delivered through a torque converter that automatically adjusts engine torque to match exactly the machine needs . . . lots of "hang-on."

EASIER CONTROLS — Only 2 hand levers to actuate Lorain "Joy Stick" air power controls — reduce effort, motion and fatigue — increase speed, comfort and production.

MODERN MOUNTINGS — The new "Shear Ball" mounting that revolves the turntable on a huge, sealed "ball bearing" . . . eliminates all rollers, exposed roller path, center pin and nut with their requirements of adjustment and maintenance. Proven by 8 years of service, hundreds of installations.

OPERATOR-DESIGNED CABS — Just what the operators asked for . . . added comfort, convenience and efficiency. They *look* different — they *are* different.

MORE CRAWLER CHOICES — 2 sizes — one 15' 6" long x 11' 10" wide for general-purpose service as shovel, crane, dragline, clamshell or hoe. One extra long and extra wide (18' 6" x 14' 2") for maximum crane lifting capacities and wide-radius dragline and clamshell work. Both full-air controlled, of course.

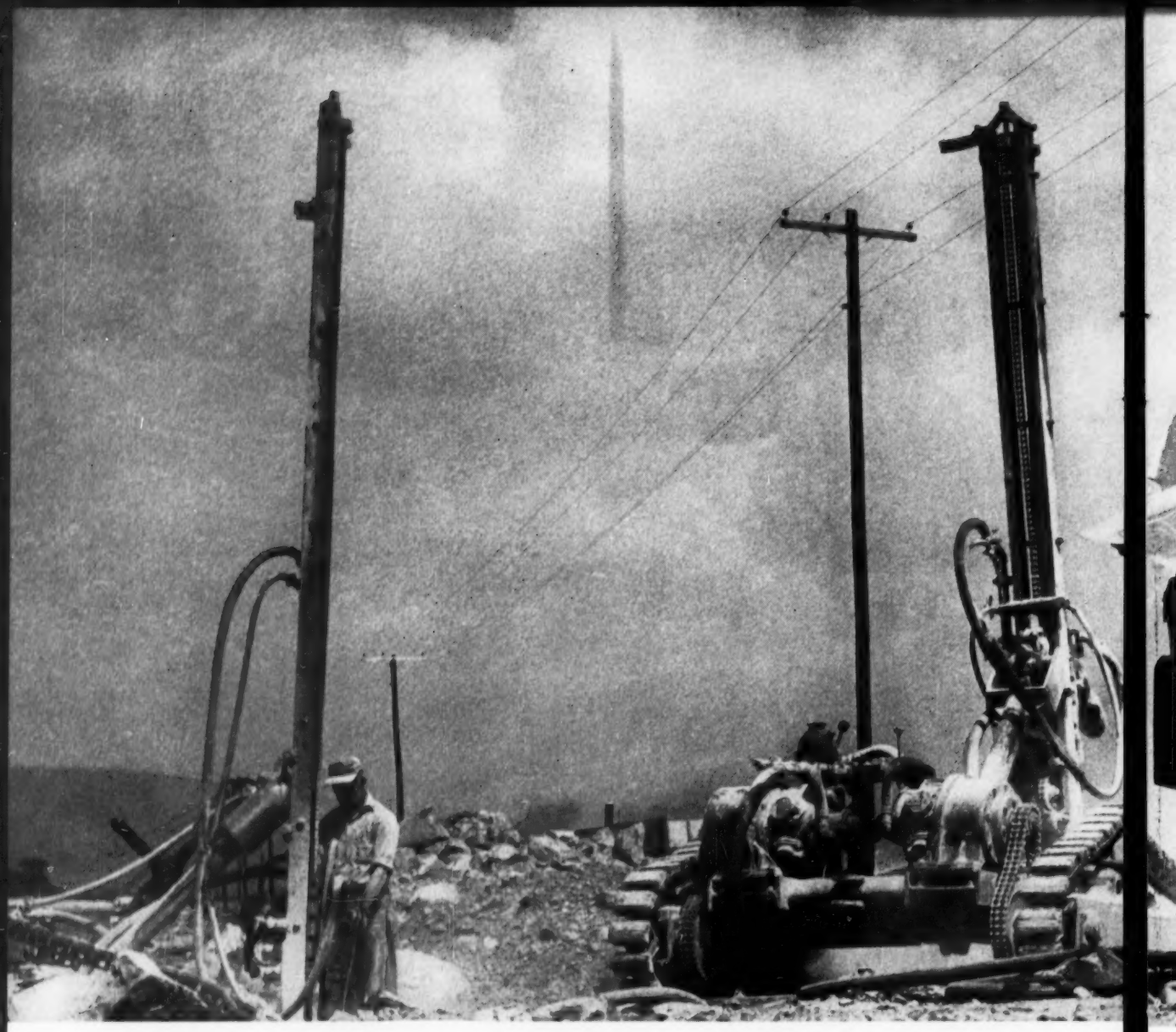
LONGER SQUARE-TUBULAR-CRANE BOOMS — Patent-applied-for square-tubular-chord crane booms. They're lighter, stronger. You can lift more, can reach out farther and can reach higher up, to 240 ft.

HIGHER CAPACITIES — Up to 60 tons as a lifting crane — 2½ yds. as a shovel or hoe.

You won't find these features in any other comparable machine. That's why the Lorain-85A will do such a much better job for you. Your Thew-Lorain Distributor can give you the full story on this and other models in the Lorain line. See him today.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN®



1 ROTARY + 2 PORT-A-TRACS =



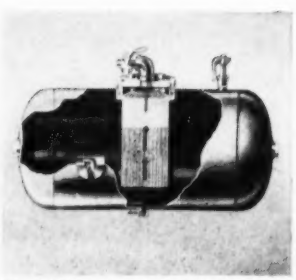
Accessibility. We removed all principal working parts of the compressor and replaced them in forty minutes—and we did it using only standard tools.



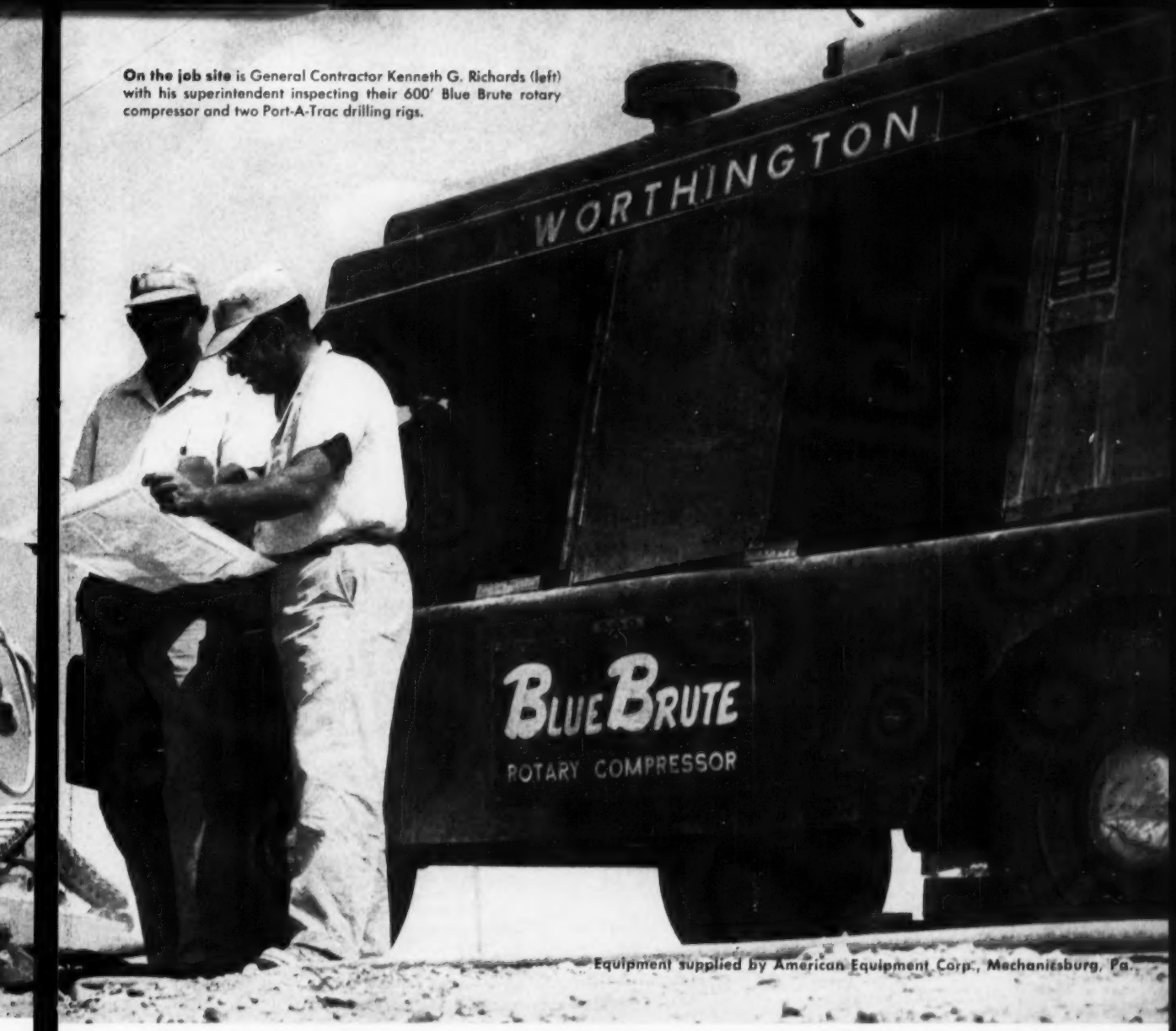
Starts every time, even in cold weather, because the Blue Brute's clutch allows you to warm up the engine without engaging the compressors.



Lifetime filter is a vortex separator connected to the compressor discharge which removes 95% of the oil from the air. Filter never needs replacement



Final filter, located in the air receiver, removes the last 5% of the oil. This filter is a long life, low-cost replacement part—easy and inexpensive to renew.



On the job site is General Contractor Kenneth G. Richards (left) with his superintendent inspecting their 600′ Blue Brute rotary compressor and two Port-A-Trac drilling rigs.

Equipment supplied by American Equipment Corp., Mechanicsburg, Pa.

2,400 YARDS OF ROCK A DAY

One rotary compressor and two drilling rigs are breaking all performance records on a new stretch of highway in Franklin County, Pennsylvania. Here's what General Contractor Kenneth G. Richards has to say about this Worthington team.

2,400 yards of rock a day. "Our Blue Brute rotary compressor is teamed up with two Blue Brute Port-A-Trac drilling rigs. The 600′ rotary operates the Port-A-Tracs constantly at full capacity. So far, we've removed over 40,000 yards of rock. We're averaging about 2,400 yards of rock per eight-hour day. That's really moving rock."

Accessibility. "You hardly ever have to fool with a Blue Brute rotary," says Mr. Richards, "but it's good to know they're easy to take apart and put back together. Every moving part is at your fingertips.

"As part of our periodic maintenance inspection program, we recently removed all the principal working parts of a Blue Brute rotary and replaced them in forty minutes." This rugged simplicity and accessibility is winning new friends for Blue Brute rotaries every year.

Blue Brute rotary compressors are available in 125′, 210′, 315′, and 600′ sizes from your nearby Worthington Blue Brute distributor. See him for a demonstration. Worthington Corporation, Harrison, N. J. In Canada: Worthington, Ltd., Brantford, Ont.

H72

WORTHINGTON



They beat the schedule and reduced the cost —



thanks to

STANG WELLPOINTS

"Build seven bridge piers, base them 18½ feet below a wet, sandy riverbed, at an elevation of 3500 feet... and do it in a hurry!" Such was the order confronting contractor Gordon H. Ball during construction of a new section of U. S. Highway 66 near Victorville, California, for the State of California.

Aware of the difficulties involved with a project of this type, general superintendent W. W. Haapala and job superintendent Joe Farrell immediately called on the John W. Stang Corporation.

Acting promptly upon the STANG recommendation, a system of STANG wellpoints was engineered and installed. At an elevation of 3500 feet, the single-stage STANG system achieved a drawdown of 18½ feet and completely dewatered the area to be excavated. *This speedy dewatering, done at a much lower cost than by other methods, allowed project completion ahead of schedule and at a profit!*

The STANG organization is ready and able, day or night, to render your water handling problems in the same time-and-money-saving way. Give them a call!

Putting water in its place

STANG

...anyplace!



WRITE FOR BULLETIN 100

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems
Dewatering Planning — Equipment — Service

BELL, CALIFORNIA	OMAHA, NEBRASKA	TACOMA, WASHINGTON	TULSA, OKLAHOMA
8221 Atlantic Avenue	2123 South 56th Street	2339 Lincoln Avenue	4026 South Urbana Street
Telephone: LUdlow 2-7421	Telephone: Walnut 7796	Telephone: Fulton 3-3438	Telephone: Riverside 2-6929

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Construction Men In the News



ARTHUR W. DAVENPORT, superintendent of construction for Stone & Webster Engineering Corp. on the firm's Virginia and North Carolina jobs will become project manager for the firm's work in Sao Paulo, Brazil.

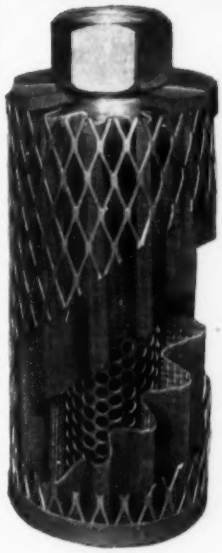
S&W there will build a 250,000 kilowatt expansion to the Piratininga steam station of Sao Paulo Light, S. A., Servicos de Electricidade.

Under Davenport's supervision, more than 1,000,000 kilowatts of electric power facilities have been built throughout Virginia and North Carolina. A native of Boston, Davenport began his career with S&W while still in school as a carpenter's helper. Later he was assigned as instrument man and field engineer to work on power projects in Massachusetts, Connecticut, and other states.

VICTOR E. COLE is a new vice president of the Henry J. Kaiser Co., Oakland, Calif. In that post, he will serve as project manager for the engineering and construction of Kaiser Steel Corp.'s $194-million expansion program.

Cole joined Kaiser in 1941 as a junior construction engineer in the company's World War II shipyards. He became assistant yard superintendent and chief engineer at the Kaiser Shipyard in Richmond, Calif., and later held various key supervisory jobs with Kaiser subsidiaries, including

MARVEL Synclinal FILTERS

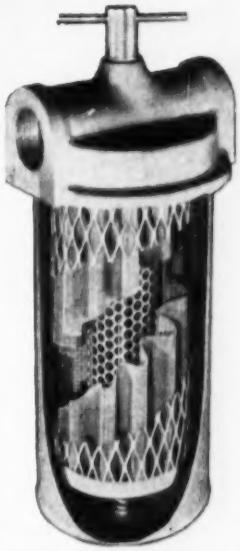


SUMP TYPE (cutaway)

For Efficient Filtration of—
Hydraulic Oils —
Fire Resistant Hydraulic Fluids —
Coolants — Lubricants —
Water

OVER 800 Original Equipment Manufacturers Install Marvel Synclinal Filters as Standard Equipment

Meet J.I.C. Standards



LINE TYPE (cutaway)

PROTECT EQUIPMENT REDUCE MAINTENANCE

Marvel Synclinal Filters installed in the sump or on the line preceding pump offer maximum protection on all hydraulically actuated and other equipment utilizing low pressure circulating oil systems. Maintenance and production costs are reduced because Marvel Synclinal Filters BALANCED design offers greater ACTIVE filtering area with sufficient storage capacity for filtered out damaging particles, thus, longer periods of productive operation are attained at minimum "down time" due to maintenance and repairs.

CONSTRUCTION ENGINEERS and MAINTENANCE MEN whose job it is to keep production machinery operating at peak efficiency and who have recognized the superiority of Marvel Synclinal Filters in the filtration of hydraulic oils, fire resistant hydraulic fluids, coolants, lubricants, etc. are specifying Marvel Synclinal Filters on all new equipment and standardizing with Marvel Synclinal Filters on all existing equipment.

Another outstanding reason for their preference is the simple construction of Marvel Synclinal Filters which allows them to be easily disassembled, thoroughly cleaned and reassembled on the spot, by any workman in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of Monel mesh sizes range from coarse 30 to fine 200.

IMMEDIATE DELIVERY

Catalogs contain complete engineering data and dimensional charts making it easy to order a filter for your specific requirements and get Immediate Delivery.



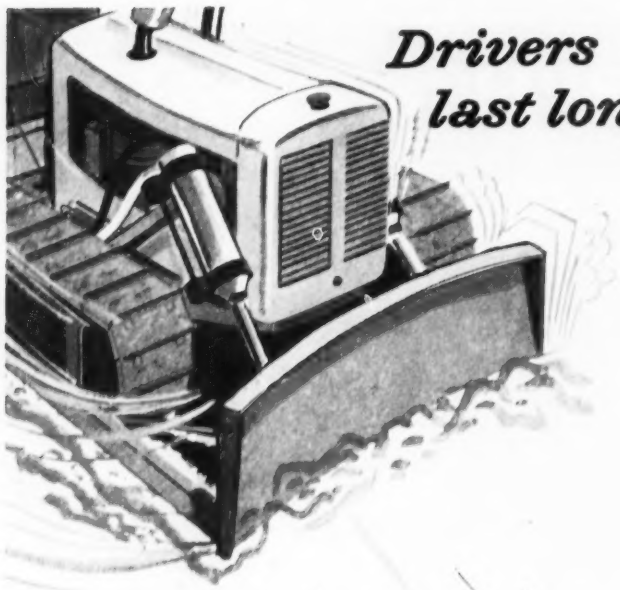
Catalogs containing complete data available on request

MARVEL ENGINEERING COMPANY
7227 N. HAMLIN AVE., CHICAGO 45, ILL.
PHONE: Juniper 8-6023

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated —

- ☐ Catalog #108—For Hydraulic Oils, Coolants, Lubricants.
- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
- ☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic)
- ☐ Catalog #361—For Water. CME-11

Name _____
Company _____
Address _____
City _____
State _____



Drivers last longer...

when heavy-duty machines use J-M Industrial Frictions

Johns-Manville Friction Materials deliver the safe, dependable performance that frees your drivers from worry about personal danger. And remember, it's much easier to replace linings than good operators. You get more out of your equipment, too, in terms of working time and "pay loads" handled.

That's because these rugged, durable facings and blocks are engineered for the job . . . and designed for outstanding performance plus maximum service life on trucks, shovels and heavy machinery.

Johns-Manville makes a wide range of industrial friction materials such as linings, facings, cones and segments that are "original parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are available in Johns-Manville Assembled Sets that assure greatest safety in your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario. Ask for booklet FM-35A.





Johns-Manville
INDUSTRIAL FRICTION MATERIALS

MEN IN THE NEWS . . .
continued

posts as assistant to the vice president of Permanente Cement Co., Oakland, and assistant general manager of Kaiser Gypsum Co., Inc.

JOHN A. GUISSINGER will become district manager of the Raymond Concrete Pile Co. subsidiaries in Puerto Rico. They are Raymond Concrete Pile Co. of Puerto Rico and Raymond Construction Co. of Puerto Rico. He succeeds Robert B. Finlay who becomes a principal officer in the company's Venezuelan organization, Constructora Raymond, C. A.

Guissinger joined Raymond in 1949. He has been assigned to projects in Venezuela, Columbia, Cuba, Puerto Rico, Turkey, and Canada, as well as the United States. Prior to his new appointment, he was chief engineer on the construction of foundations and approaches for the Second Narrows Bridge in Vancouver, British Columbia.

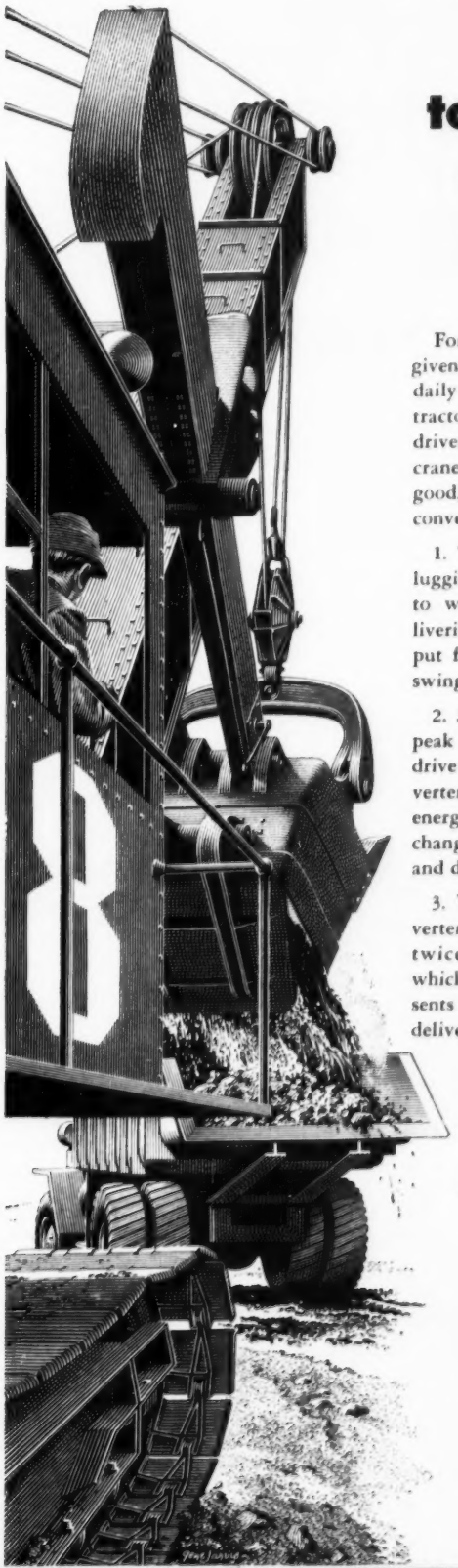
BRIG. GEN. WILLIAM A. CARTER, JR. is the new president of the Mississippi River Commission. Carter also will hold the position of Division Engineer, Lower Mississippi Valley Division of the U.S. Army Corps of Engineers.

In his post, the general will direct investigations, design and construction of flood control, navigation, and other water resource works in the valley of the lower Mississippi River from Hannibal, Mo., to the Gulf of Mexico. Annual cost of works under his jurisdiction range from $85 to $100 million.

Gen. Carter recently had been in Japan where he served as Deputy Chief of Staff for Logistics for the Armed Forces, Far East, and the Eighth Army. Prior to that he served as engineer for the same organizations. During World War II he was engineer for the First Army during its drive into Germany.

GEORGE A. REZNICEK is the newly elected treasurer of the William L. Crow Construction Co., New York City.

Mr. Reznicek began with Crow in 1934 as timekeeper and worked his way up the ladder successively as assistant superintendent, project engineer, and purchasing agent.



Here's why torque converter equipped machines do *more* work at *lower* operating cost

For higher work capacity on any given load, and for greater all-round daily production, more and more contractors are specifying torque converter drives in their new excavators, erecting cranes and loaders. And here are five good, profitable reasons why the torque converter is the preferred type of drive:

1. The torque converter eliminates lugging and stalling . . . permits engines to work at maximum efficiency delivering constant high-horsepower output for heavy digging loads and fast swinging.

2. *Smooth* converter power reduces peak loads throughout the machine's drive train because fluid within the converter absorbs much of the impact energy caused by quick drum speed change . . . thus protecting *both* driving and driven equipment.

3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speeds, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter . . . constant line tension is maintained . . . there's no jerking or snapping.

5. An infinite variety of ratios is available to work with . . . permitting smooth, accurate, *safe control* of loads and delicate "inching" and "holding" under power . . . as well as adjusting for wide variations in dipper loading, substituting greater digging effort for speed, when required.

Wherever earth and rock are moved, wherever steel is erected, you'll find contractors using these five advantages . . . *to convert their horsepower into greater-than-ever profits!*

• • •

Twin Disc Torque Converters—*three-stage* or *single-stage*, from 30 to 1000 hp—are available from all leading manufacturers of heavy-duty machines. Be sure to specify one in your next unit. Take advantage of the five reasons why torque converter equipped machines do *more* work at *lower* operating cost.

Twin Disc is the world's leading manufacturer of friction clutches and fluid couplings for heavy-duty industrial applications . . . and the only manufacturer producing *both* three-stage *and* single-stage torque converters. Because of its complete line of industrial drives, Twin Disc can offer *unbiased* recommendations for any heavy-duty power transmission application.



TWIN DISC

TWIN DISC

Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • TULSA

You saw them first at the Road Show

Now the show is really on the road with big new Michigan Equipment!



375 hp moves 7 yard bladeful

Among the many big new Michigan Tractor Shovels, Scrapers, and Dozers now hard at work is this Model 380 Dozer. Photographed on a superhighway job in Michigan, the powerful rig moved more than 7 cubic yards of fill per pass. Power shift with 4 speeds forward and reverse greatly reduced normally-expected "deadhead" time. *Only from Michigan* could this contractor—or you—have a choice of 3 rubber-tire dozer sizes . . . Michigan now offers 375, 262 and 165 hp models.

27 yards without sideboards

On this Midwestern Super Highway, the Michigan Model 310 Tractor Scraper repeatedly hauled heaped loads of 27 pay yards. Its loading time averaged only 45 seconds. Material was sand and sandy clay. This Model Michigan features 375 hp and 4-speed power shift transmission with speeds up to 30 mph. It is the largest of three Michigan Scrapers now available . . . 10½, 18, 27 yards.





Power shift produces bonus yardage

Hauling 1,300 ft over rolling terrain typical of many jobs, this new 18-yard Michigan Tractor Scraper outproduced its also-new 18-yard competition, 198 to 146 pay yards per hour. Most of Michigan's 52-yard-per-hour advantage resulted from its power-shift 4-speed transmission *which enabled it to change gears without slowdown or loss of momentum* . . . a big advantage on this Detroit-area quarry stripping task with its varying, often steeply adverse haul grades.



Easy accessibility boosts work-time

At their open pit near Lost Hills, California, Holloway Gypsum Co. is using two Model 210 Michigans on work other rubber-tired scrapers could not perform successfully. All major components of these (and all other) Michigan Tractor Scrapers can be removed without disturbing adjacent parts . . . an important consideration on jobs like this where dust and desert heat hamper machines, and tight production schedules limit repair time.



Digs out, lifts, 4 yards per load

Powerful breakout, low-level tipback help new Michigan Model 275 Tractor Shovel consistently fill its 4 yard standard bucket for owner, Building Materials Inc, Torrington, Connecticut. Like all Michigans, the Model 275 features *all-Clark-built power train.* Components of this easily-accessible power train (and many other parts) are fully interchangeable between Tractor Shovels, Scrapers, and Dozers in the same series.



Two passes heap 14 yard truck

Records of this Florida quarry show load time for 14 yard trucks now *averages* 1½ minutes. Loading unit here is a big new Model 375 Michigan Tractor Shovel; standard SAE-rated bucket capacity, *6 cubic yards.* Despite its size—10'4" high, 25'8" long, 62,000 lbs total weight—operation is as simple as on the smaller Michigans; with power steer, power shift, fingertip hydraulic bucket controls standard. R. H. Wright & Son, Fort Lauderdale, replaced *two* 2½ yard draglines with the *one* mobile Michigan.

Before I buy any new equipment, I'd like data on your Michigan

☐ Tractor Shovels: ☐ 2¾ yard, ☐ 4 yard, ☐ 6 yard

☐ Tractor Dozers: ☐ 165 hp, ☐ 262 hp, ☐ 375 hp

☐ Tractor Scrapers: ☐ 10½ yard, ☐ 18 yard, ☐ 27 yard

Name _____ Title _____

Company _____

Address _____

Type of Work _____

MAIL TO

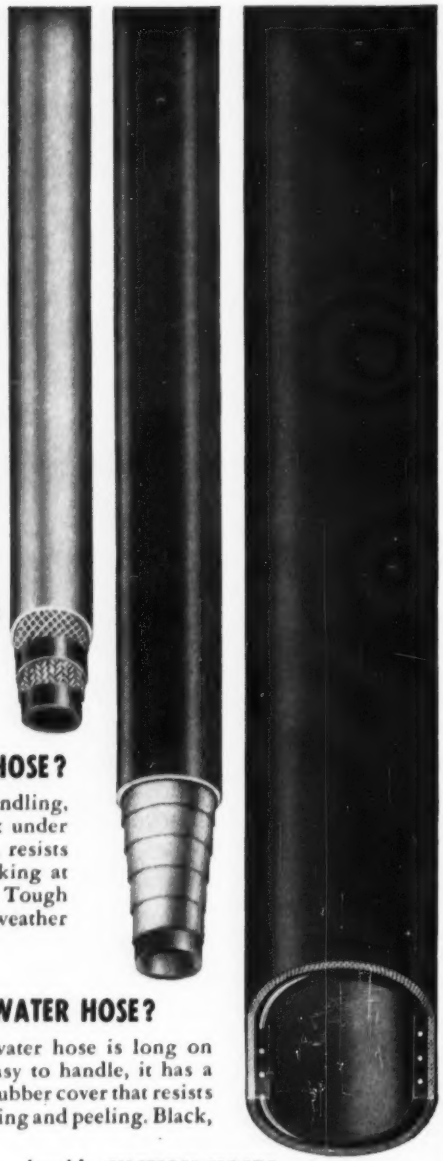
Michigan is a registered trade-mark of

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 53, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

Which QUAKER HOSE do you need today...

to cut costs tomorrow?



Rugged, non-twisting AIR HOSE?

Though lightweight for easy handling, this hose won't snake or twist under pressure. It takes dragging . . . resists oil damage . . . withstands cracking at temperatures as low as 20°F. Tough Neoprene cover withstands all weather conditions.

Easy-to-handle WATER HOSE?

This all-purpose water hose is long on wear and value. Easy to handle, it has a black, high-grade rubber cover that resists sun, weather, cracking and peeling. Black, non-porous tube.

Strong, durable SUCTION HOSE?

Here's a rugged, long-lasting hose for conducting water under pressure or suction. It resists kinking and crushing and has good sun, weather and abrasive-resistant qualities. Tube resists action of water containing light concentrations of alkalies, acids, grit and sand.

THESE are but a few of the many types of air, water and suction hose your Quaker-Quaker Pioneer distributor has on hand and ready to go. Call him—whatever your needs. For free brochures, write:

H. K. Porter Company, Inc., Quaker Rubber Division, Phila. 24, Pennsylvania, or Pittsburg, California.

H. K. PORTER COMPANY, INC.

QUAKER RUBBER DIVISION

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributor Appointments

Yale & Towne Mfg. Co.: The Contractors Machinery Division has three new dealers. They are: Inland Diesel & Machinery Co. of Spokane, Wash.; Clyde Equipment Co. of Portland, Ore.; and Aldridge-Harbour Equipment Co. of Jackson, Miss.

American Road Equipment Co.: A major change is announced in the New York-New Jersey dealer organization. Advance Equipment Corp. of Paramus, N. J., and Johnson & Dealaman of Newark, N. J., become exclusive dealers for this area, including New York City, and previous dealer connections are eliminated.

Koehring Co.: Kwik-Mix division announces two new dealers. They are: Armstrong Caster Co. of Denver, Colo.; and Dakota Supply Co. of Sioux Falls, S. D.

Blaw-Knox Co.: MacDonald Equipment Co. of Denver, Colo., has been appointed a bituminous equipment dealer for the Construction Equipment Division.

Poor & Co., Inc.: Pioneer Engineer Division has appointed Spreitzer, Inc., of Cedar Rapids, Ia., as dealer for its entire line of aggregate producing equipment.

Littleford Bros.: Two new dealers are announced. They are: West Virginia Tractor & Equipment Co. of Charleston, W. Va.; and T. B. McShane Co. of Omaha, Neb.

On the Sales Front

Curtiss-Wright Corp.: Harold C. Clark has been named general sales manager of diesel equipment for the Unica-Bend Corp. subsidiary. He will direct sales of the recently acquired Mercedes-Benz diesel engine line.

continued on page 195

RELIABLE IGNITION *At Hand!*



for CONSTRUCTION ENGINES . . .

AMERICAN BOSCH MAGNETOS

Packed with electrical energy, American Bosch Magnetos kick off FAST—supplying the instantaneous sparks that start Construction Equipment engines FASTER—and keep them running LONGER—even under the toughest working conditions! That's why they're installed as original equipment by so many leading engine manufacturers for Construction Industry services.

Your engines can have this reliable ignition—replacements are available for practically every engine. Precision engineering and rugged construction assure full-time, trouble-free operation. Write directly, TODAY; find out how American Bosch Magnetos can improve your engines and operations. American Bosch, Springfield 7, Mass. A Division of American Bosch Arma Corporation.

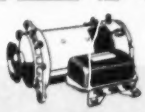


Better to Start With
AMERICAN
BOSCH
MAGNETOS
Best in the Long Run!

AMERICAN BOSCH



Automotive and Aviation Magnetos



Generators and Regulators



Components for Aircraft Engines

AMERICAN AB BOSCH



Small Electric Motors



Electric Windshield Wipers

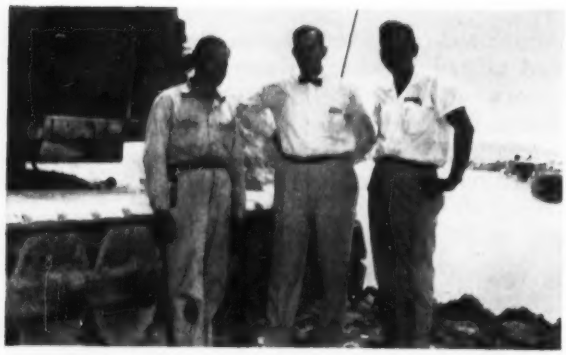


Diesel Fuel Injection Equipment



Stockpile for the road foundation. The material is taken from the edge of the Gulf of Mexico which parallels the project at this point on the Florida Keys.

Gulf Products and Fine Service

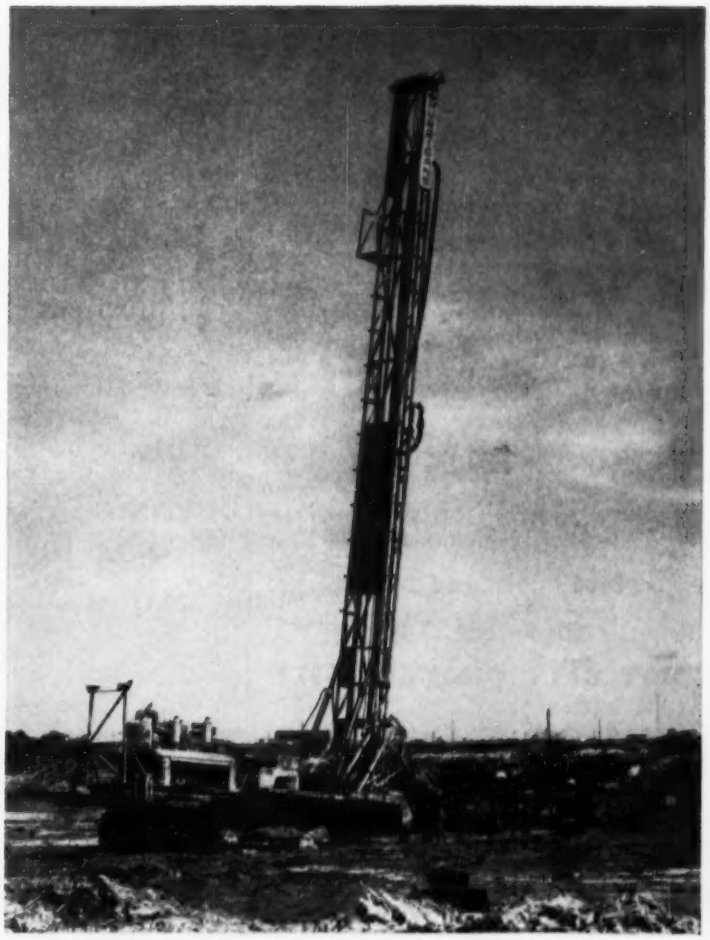


Left to right: Jimmy Smoak, Superintendent, R. H. Wright & Son; P. J. McConnell, Engineer, Florida State Road Commission; and L. F. Proctor, Assistant District Manager, Gulf Direct Sales, Miami.

Seventy days along on a 350-day job and 23% ahead of schedule! That's the news from the Boca Chica Naval Air Base bypass project seven miles north of Key West, Florida, on U. S. No. 1. Working at such a fast pace demands top performance and protection from fuels and lubricants to keep equipment on the go. Says Jimmy Smoak, Superintendent of Contractors R. H. Wright & Son, Fort Lauderdale, "All concerned with the job are well pleased with the performance of Gulf products and service."

Gulf can serve you too. 1500 strategically located warehouses, in 32 states, stand ready to supply you with a steady flow of quality fuels





Mayhew Hurricane Drill, mounted on International TD-18 Tractor, sinks blasting holes to a depth of 30 feet near edge of the Gulf.

keep equipment rolling on Florida highway project

and lubricants. A Gulf Sales Engineer, backed by 1300 scientists and technicians, provides cost-free, expert advice on any problem involving the use of petroleum products. Gulf fuels and lubricants insure performance-plus from engines, help avoid mechanical delays and lower your maintenance costs. For full information, call your nearest Gulf office, or mail the coupon.

GULF

GULF OIL CORPORATION
1822 Gulf Building, Pittsburgh 30, Pa.

Without any obligation on my part:

- ☐ Send me a copy of "Gulf and Your Business."
- ☐ Send me a copy of the new "Contractors' Guide" (Lubrication and Maintenance Information).
- ☐ Have a Gulf Sales Engineer call on me.

Name .....
Title .....
Company .....
Street Address .....
City ..... Zone ..... State .....

HOW 8,000 lbs. was safely hoisted 75 feet in THREE minutes flat!

Schumacher used 110 foot boom and 15 foot jib on his 25 ton BAY CITY CRANEMOBILE

Three minutes from street to roof—180 seconds and an 8,000 pound air-conditioning unit was placed on top of the Associates Investment Building in South Bend, Indiana —six stories up!

This particular feat—achieved by Peter Schumacher Sons, Inc., general contractors and engineers—was amazing enough to the public so that it was televised and featured in the local newspaper. Yet CRANEMOBILE users know a CRANEMOBILE takes on jobs like this in stride!

High lifts are only one phase of a CRANEMOBILE'S work, for a CRANEMOBILE is a busy CONTRACTOR'S most versatile, most profitable piece of equipment. For lifting, loading, pouring and dozens of other work-projects a BAY CITY CRANEMOBILE'S power, smoothness of operation, ease of control, balance, and speed are paying dividends to owners everywhere. Call your dealer or write direct for illustrated catalog.



BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



264

SALES AND SERVICE...
continued

U. S. Steel Corp.: William W. Crawford has been appointed director of purchases for the company. In the American Steel & Wire Division, Maxwell D. Millard becomes assistant vice president-sales, and Howard B. Maguire succeeds him as general manager of sales.

LeTourneau-Westinghouse Co.: The following three sales representatives have been appointed: N. J. Richart for equipment sales in Atlanta, Ga.; R. D. Paustian for wire rope sales in the central and north eastern area; E. H. Russ for wire rope sales in the south eastern territory.

Eimco Corp.: J. Lyle Prickett has been appointed tractor sales and service specialist in the Pittsburgh office.

L. B. Foster Co.: Four new appointments in the sales staff have been made. Raymond B. Johnson joins the New York office as a specialist in pipe sales. Ralph E. Hickey and James R. Foster join the Houston office as sales engineers. E. G. Giles has been made assistant manager of the order and traffic department.

Caterpillar Tractor Co.: John E. Pilon is the new district representative in the Southwest Sales Division, working out of San Francisco. For the past six years he has been a special representative in the Washington office. Herbert J. Benzel has been appointed earthmoving representative and will work out of Billings, Mont.

LeTourneau-Westinghouse Co.: D. H. Mitchell is the new eastern sales manager for LeTourneau-Westinghouse. This division includes 21 states and 4 Canadian provinces. Mitchell was sales representative in Virginia and the Carolinas and will be succeeded in that area by O. C. Zachary.

Seaman-Andwell Corp.: William McGillivray has been appointed sales manager in Eastern Canada. Working out of Montreal, McGillivray will handle sales of road construction equipment in Ontario, Quebec, and the Maritime provinces.

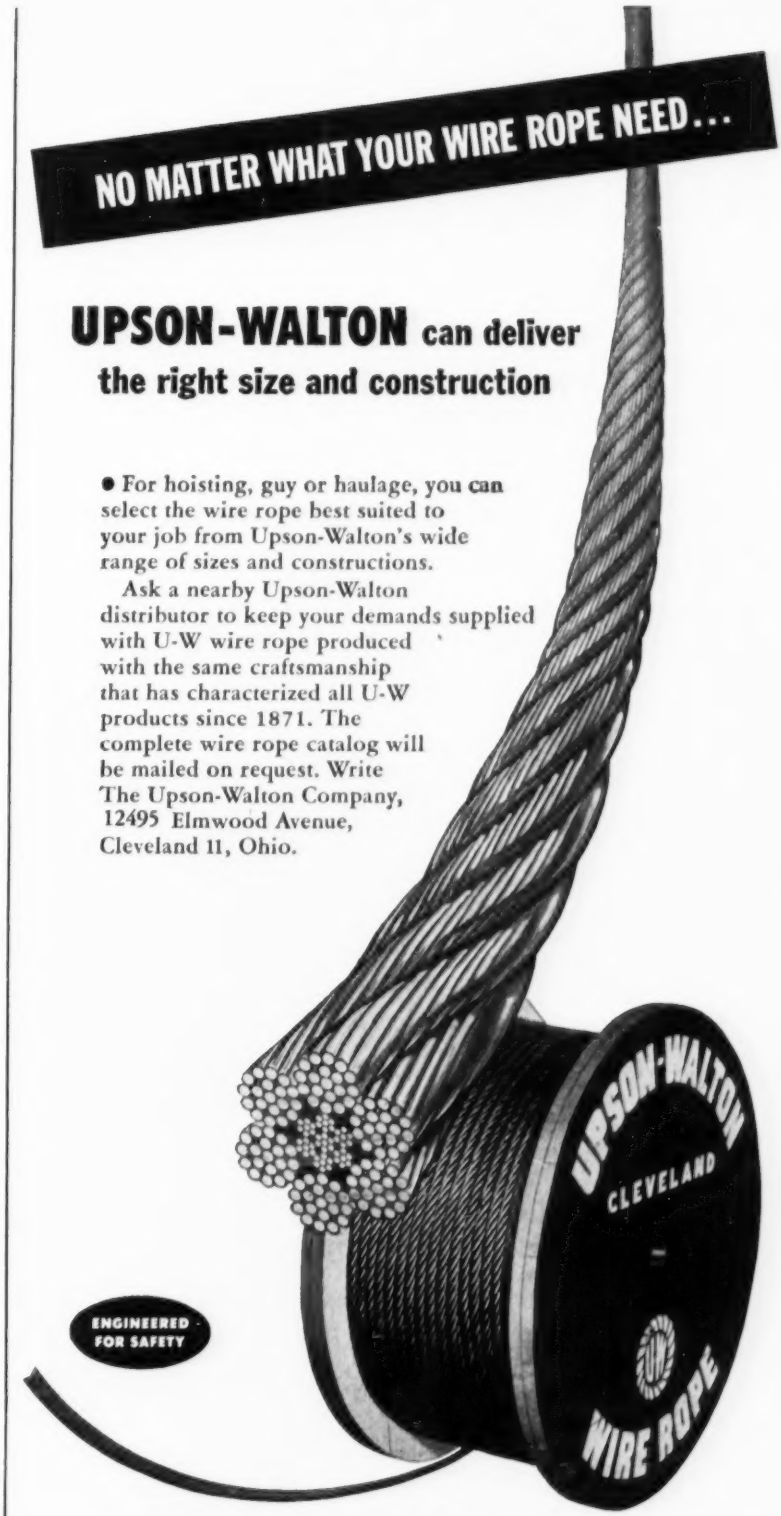
continued on page 198

NO MATTER WHAT YOUR WIRE ROPE NEED...

UPSON-WALTON can deliver the right size and construction

• For hoisting, guy or haulage, you can select the wire rope best suited to your job from Upson-Walton's wide range of sizes and constructions.

Ask a nearby Upson-Walton distributor to keep your demands supplied with U-W wire rope produced with the same craftsmanship that has characterized all U-W products since 1871. The complete wire rope catalog will be mailed on request. Write The Upson-Walton Company, 12495 Elmwood Avenue, Cleveland 11, Ohio.



The UPSON-WALTON Company
SINCE 1871
Manufacturers of WIRE ROPE • ROPE FITTINGS • TACKLE BLOCKS
CRANE HOOK BLOCKS
Other offices: Chicago • Pittsburgh • New York

Earthmovers do double-duty



...relocate 5½ tortuous miles of U.S. 2, near "Continental Divide"

Tournapull® scrapers change river channel --convert to Rear-Dumps, outmaneuver trucks 5 loads to 4, hauling blast-rock

Completion of a million yards of tough earthmoving by Tony Marrazzo Construction Co., Boise, Idaho, has ended a motorists' nightmare east of Nyack, Montana, along "the most dangerous 5 miles in the entire cross-country length of U. S. 2". Road hazard was so bad, that even before surfacing, traffic started using new route to bypass hairpin turns in the old mountainside road.

Construction of a river-level road along Middle Fork, Flathead River — boundary of Glacier National Park — involved moving 1,000,000 cu. yds. of dirt and rock. To handle 75% of the yardage, Marrazzo used three 16-yd., 210 hp, self-propelled C Tournapull-Scrapers — plus 2 interchangeable, 22-ton rear-dump trail-units. Machines were equipped with Electrotarders — an auxiliary braking system which eliminated brake wear and provided added safety on long, steep grades.

Scraper trail-units used first

C Tournapull-scrapers dug out new channels to straighten 3 curves in the mountain river. To do this, they waded out thru water with full loads, working in the river bed without difficulty. Scraper units also handled other dirtmoving assignments along the job . . . built grade along the river . . . and cut off a sharp curve to relocate 1600′ of G.N.R.R. track.

Convert 'Pulls to Rear-Dumps Haul blast-rock to "Devil's Elbow"

In one 3000′ section of road, contractor had to drill, blast, and excavate 195,000 cu. yds. of rock. For hauling, contractor converted 2 "C's" to Rear-Dumps by a simple change of trail-units. The two 22-ton 'Pulls and 2 similar-sized conventional competitive dump trucks hauled and dumped rock in a deep valley . . . built a fill for the roadway, 125′ high, over an 8½′ x 418′ culvert. The new highway cuts

C Tournapull Rear-Dump rolls onto narrow fill, and pivots around for quick back-up to dump edge. For only about 25% extra outlay, Tony Marrazzo Construction Co., Boise, Idaho, bought interchangeable dump trail-units for their "C" scrapers. Scrapers loaded, hauled, and spread dirt; Rear-Dumps hauled shovel-loaded rock, near Nyack, Montana.

straight-across the deep ravine, and eliminates the always-dangerous curve called "Devil's Elbow".

"C's" save 2 minutes per cycle

A stop-watch time-study showed that Tournapull Rear-Dumps' extra speed and 90° turn-ability saved time in restricted loading zones . . . over narrow, shelf-like haul-roads . . . and at tight dump areas. Chart at right shows typical time study (in minutes) for one phase of the job.

	Competitive Dump-trucks	Tournapull Rear-Dumps	"C's" saved
LOAD, 5-2½ yd. dipperfuls	1.97	1.91	0.06
MANEUVER, at shovel	0.84	0.52	0.32
HAUL, 1470' down and up grades to 18%	3.04	2.36	0.68
MANEUVER, at fill	1.22	0.46	0.76
DUMP	0.28	0.21	0.07
RETURN, 1470'	2.62	2.51	0.11
TOTAL CYCLE, average	9.97	7.97	2.00

"Muck-movin' sons o' guns"

Marrazzo superintendent says, "These Tournapulls are muck-movin' sons o' guns . . . they'll get under a tighter spot than (competitive unit). I like their maneuverability in narrow cuts. They work in and get loaded quick . . . and this is some of the roughest going there is!"

Rear-Dump operator reports, "'C's' are good maneuvering rigs . . . so far ahead that our dump-truck type haulers aren't even in it. The Electrotarder pulls you right down — no matter how fast you're going — without touching the regular brake pedal. It's a real brake-saver."

Contact us for complete details on how Tournapull Rear-Dumps and scrapers — or combination of both — can cut your earthmoving costs.



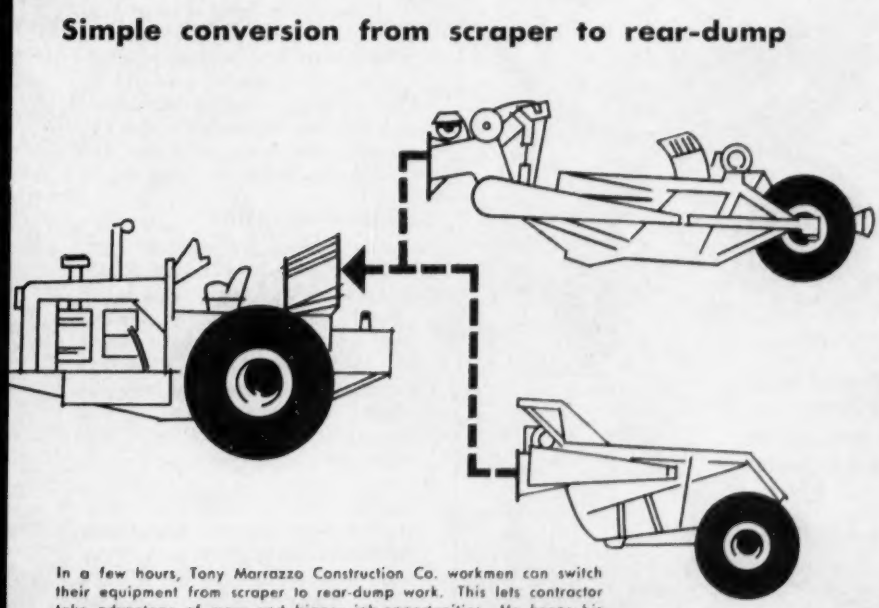
On this narrow ledge, 2 of Marrazzo's C Rear-Dumps and 2 competitive dump trucks were each loaded with five 2½-yd. buckets of blast-rock. Restrictive terrain temporarily made it necessary for loaded haulers to back up to 40' wide turn-around before starting haul.



Hauling thru cuts previously carved out, loaded Tournapulls attained speeds to nearly 30 mph, averaged 7.08 mph from start to stop on 1470' trip to the fill. Haul road presented a continuous succession of grades varying from 18% favorable to 10% unfavorable on the haul.

CPCR-1206-H

Simple conversion from scraper to rear-dump



In a few hours, Tony Marrazzo Construction Co. workmen can switch their equipment from scraper to rear-dump work. This lets contractor take advantage of more and bigger job-opportunities. He keeps his prime-movers working and earning all thru an extended season.

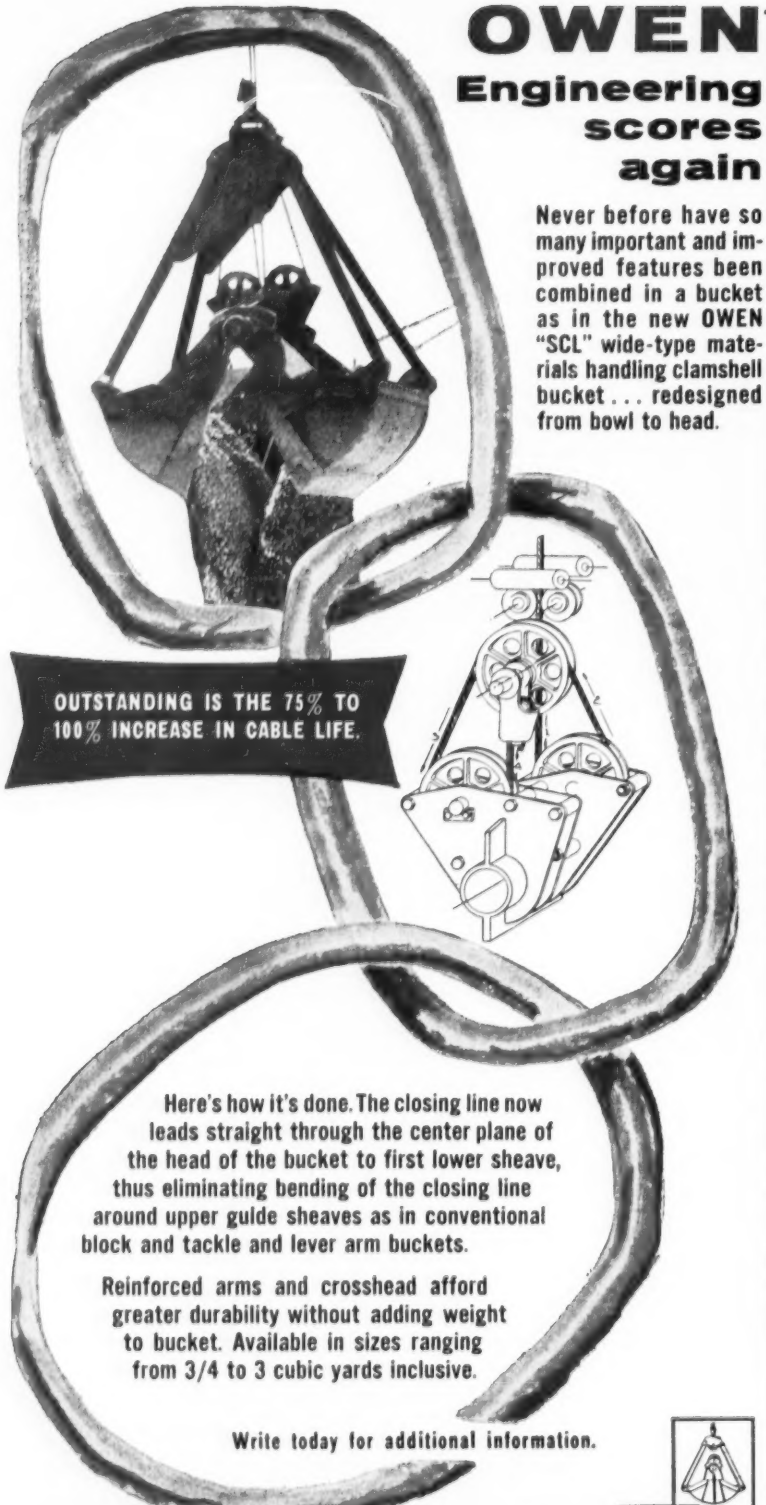


Both scraper and rear-dump units use same wheels, tires, brakes, and electric controls. No special tools or equipment are needed to make the change-over. Same prime-mover can power other interchangeable tools: bottom-dumps, lift-and-carry crane, and flat-bed.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



SALES AND SERVICE . . .
continued

Koehring Co.: Arthur V. Cossens has been promoted from field service manager to assistant sales manager of the Koehring division. George E. Schmidt will succeed Cossens as field service manager.

In the Main Office

U. S. Rubber Co.: John W. McGovern has been elected president of the company. He joined the company in 1920 and held a number of accounting and production positions. He became a vice president in 1945 and executive vice president in 1956. He succeeds H. E. Humphreys Jr. who will continue as chairman of the board of directors and chief executive officer.

Caterpillar Tractor Co.: The manufacturing general office has been reorganized into three departments. Hugh Boggs is now manager of planning and plant engineering. Roy McCluskey is manager of production control. Dale Wright is manager of quality control.

Associations

Asphalt Institute: Lt. Col. Wesley D. Alcorn has been named district engineer in the Chicago office. Alcorn was formerly a supervisor of instruction at the Ft. Belvoir army engineering school and has also had considerable experience in both military and civilian construction posts.

Special Mention

Ogden Corp.: The Eimco Corp. and the American Foundry & Machine Co. have both been taken over by Ogden. Eimco is a major producer of mucking, excavating, and loading equipment. American Foundry produces castings for Eimco. Eimco president Joseph Rosenblatt will continue to operate the company.

Massey - Harris - Ferguson, Inc.: M-H-F has bought the assets, parents, and designs of Mid-Western Industries, Inc., of Wichita, Kan. The Wichita company's products include loaders, backhoes, cranes, scarifiers, dozer blades, fork lifts, utility buckets, and the Davis "Pit-Bull." These products will continue to be marketed under the Davis brand name.



For You

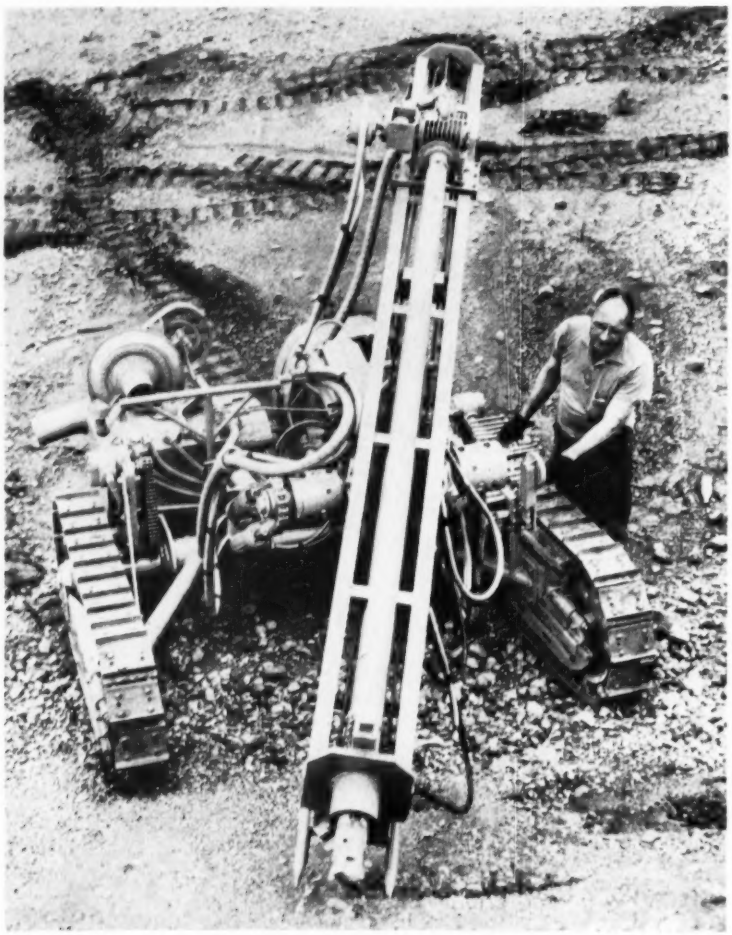
This advertisement was run in a recent issue of U.S. News and World Report by LeTourneau-Westinghouse. Art work is available for use in your ads announcing opening of new jobs or for detour sign boards. Write us for reprints . . . and good luck to you for '58.

1579-MI-1

Construction Equipment News...

Two Drilling Actions ▶

The Reich 150 Blast Hole Driller offers both rotary and percussion drilling actions. A Cone-Drive speed reducer drives the drill from a hydraulic motor at 60 rpm, while compressed air provides the hammering action. The reducer's worm gearing absorbs shock loads. The drill, which can work at compound angles, swings horizontally and vertically through 150-deg arcs.—**Reich Bros. Mfg. Co., Terre Haute, Ind.**





▲ Frees Frozen Steel

The double-surface locking design of Atlas Copco's new steel pull wrench makes it easier to quickly free stuck drill steels from drift faces. The wrench grips the steel so that the operator can exert both a pulling and twisting action on frozen steel at the same time. Designed for use with ⅞-in. hexagonal steels, the wrench can be used in any position.—**Atlas Copco Eastern, Inc., Paterson, N.J.**

The New Ford Line ▶

A boost in drawbar power and the introduction of a new unit feature the new line of Ford utility tractors. The six Workmaster tractors in the line now have 32-hp engines and the Powermaster series now boast 44-hp engines, a 10% power increase. The new 841 Powermaster, right, features power steering and a 12-speed, under-over transmission.—**Tractor & Implement Div., Ford Motor Co., Birmingham, Mich.**





Carries Its Water

Malsbary's new trailer for its 250-HPC steam cleaner carries its own water and power plant for field use. The trailer has two 150-gal water tanks located fore and aft of the cleaner. An equalizing device maintains uniform water level so that the trailer is always balanced. The cleaner has both a gasoline engine and an electric motor. The 250 cleaner provides a choice of hot solution, 200-deg. F. hot water, or cold water, all delivered at 300 psi; and low pressure warm water and wet steam.—**Malsbary Mfg. Co., 845 92nd St., Oakland 3, Calif.**



New Oliver Crawler

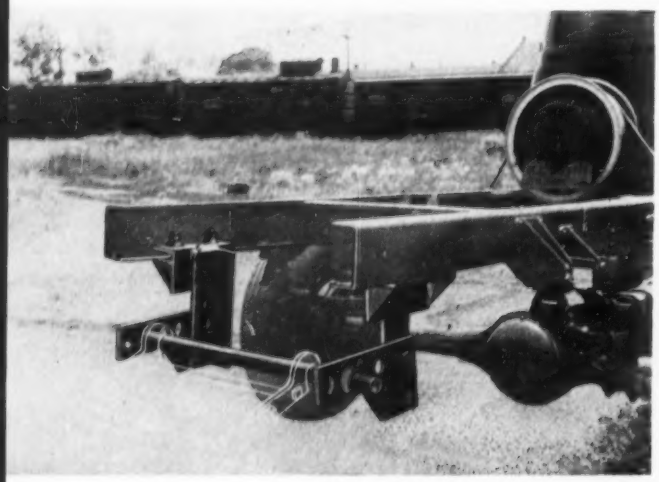
Latest addition to the Oliver crawler tractor line is the OC-15, a 16,960-lb unit powered by a 75-hp, six-cylinder diesel. Like its predecessors, the OC-15 features Oliver's controlled differential steering system, which provides full power to both tracks at all times. Speeds range from 1.67 to 5.6 mph forward and 1.99 to 4.48 mph in reverse. With standard 16-in. trackshoes, total ground contact area is 2808 sq in. A full line of attachments is available for the crawler.—**Oliver Corp., 400 W. Madison St., Chicago 16, Ill.**



First Thew Loader

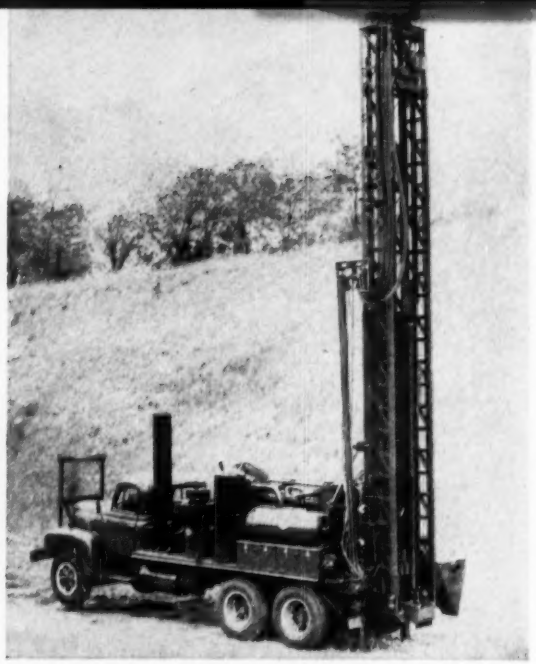
A four-wheel drive, 1¾-yd model is the first in the new line of Thew Moto-Loader front-end loaders. Available with gasoline or diesel power, the loader has a fully reversing transmission and a torque converter. Ease of operation is an important feature. Two foot pedals—one for forward and one for reverse—enable the operator to control direction with one foot while braking with the other. This frees both his hands for steering and bucket controls. Accelerators under the foot pedals control speed.—**Thew Shovel Co., Lorain, O.**

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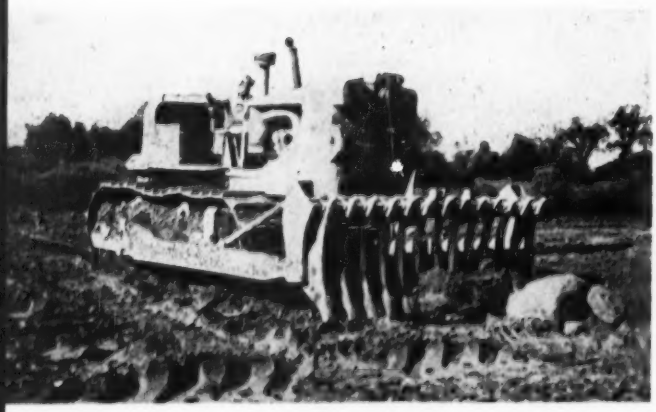
Hitch Mounts Quickly

The Quick-Mount hitch easily attaches to any dump truck without drilling or cutting. Slotted plates slip over chassis frame channel flanges and are locked in place with four set screws. The towing bar is wide enough to accommodate equipment with two hitches, such as bituminous pavers. Distance between the truck and towed equipment is variable.—**Burch Corp., Crestline, O.**



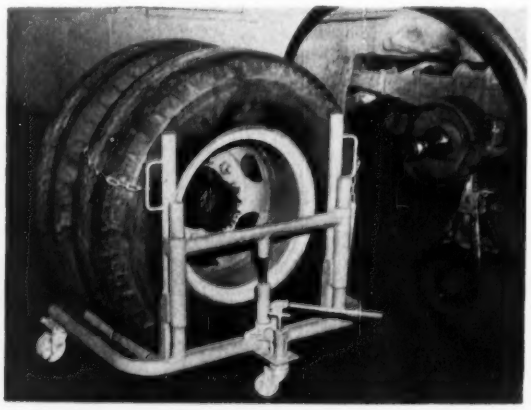
Reduces Fuel Costs

Fuel costs for Schramm's truck-mounted Rotadrill can be lowered as much as 70% when its compressor unit is powered with its own direct-coupled International diesel engine. The engine also drives hydraulic pumps, the oil cooling system, and dust collecting fan. The rotary can drill 700-ft holes with 4½-in. drill pipe. **Schramm, Inc., 900 E. Virginia Ave., West Chester, Pa.**



Land Clearing Tool

Rockland's new line of land clearing rakes features a design that makes it easier to adjust or add teeth in the field. The design also is said to eliminate the accumulation of debris between teeth. One of several sizes available, the Rockland RF-3 is pictured mounted on an Allis-Chalmers HD-21 crawler.—**Rockland Allied Equipment Co., 3778 W. Colonial Drive, Orlando, Fla.**



Handles Big Wheels

A new line of wheel dollies makes it easier to remove, replace, lift, or transport heavy single or dual wheel assemblies. Available in capacities up to 2,600 lb, the dollies feature 4-in. swivel wheels, three-point suspension, and a 2-in. leveling adjustment screw for horizontal alignment.—**Salsbury Corp., 1161 E. Florence Ave., Los Angeles 1, Calif.**

continued on page 206

Eaton 2-Speed Axles keep trucks YOUNG!



Add Extra Thousands of Low-Cost, Trouble-Free Miles

Drivers of Eaton 2-Speed Axle trucks select from *double* the conventional number of gear ratios—pick the gear ratio best suited to road, load, and traffic conditions. Using the RIGHT gear ratio for every condition permits engines to run in their most efficient and economical speed range—reduces stress and wear on engine, transmission, and the axle itself. This reduction in stress and wear keeps trucks on the job and out of the shop, cuts operating and maintenance costs, and adds thousands of miles of low-cost operation to the life of the truck. Whenever a hauling job requires the combination of pulling power and speed, trucks equipped with Eaton 2-Speed Axles do the job quicker at lower cost; they stay YOUNG longer—and are worth more when traded in.



MORE THAN TWO MILLION EATON AXLES IN TRUCKS TODAY!

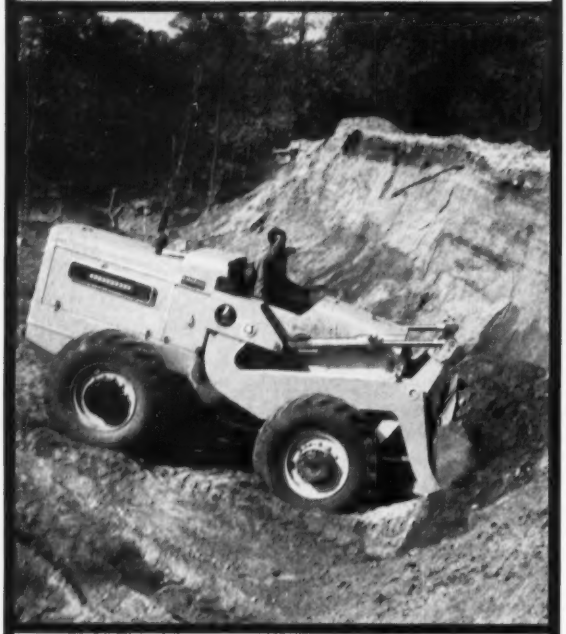
For Complete Information see your Truck Dealer

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Engine Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Hydraulic Pumps Motor Truck Axles • Permanent Mold Gray Iron Castings • Forgings • Heater-Defroster Units • Automotive Air Conditioners Fastening Devices • Cold Drawn Steel • Stampings • Gears • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

you DIG more



with BREAKOUT action

. . . and 40° bucket tip-back ***at ground level,*** both of which are productive features EXCLUSIVE with "PAYLOADER" tractor-shovels. They can not be found on any other rubber-tired loader.

To the user they mean that loads can be obtained easier and faster with less strain on the machine and bigger loads can be RETAINED in the bucket with the 40° tip-back AT GROUND LEVEL.

The FIRST four-wheel-drive tractor-shovels were introduced by The Frank G. Hough Company just ten years ago and many of them are still in daily use. Neither they, nor any of the numerous copies being offered are as productive as these new "PAYLOADER" models.

Every "PAYLOADER" distributor not only invites comparison but will be glad to PROVE in ACTUAL DEMONSTRATION all of the points of "PAYLOADER" superiority.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

11-B-1a

you CARRY more



with CUSHIONED loads

. . . using hydraulic load-shock absorber as standard equipment on all four-wheel-drive "PAYLOADER" models, another HOUGH EXCLUSIVE.

It doesn't matter what kind of an extra big load an operator was able to get to begin with if most of it is lost in SPILLAGE while traveling.

The "PAYLOADER" load-shock absorber does not completely eliminate spilling if you are operating over exceptionally rough surfaces . . . but it does minimize the loss and enable you to RETAIN more.

This is just one more reason why these new "PAYLOADER" tractor-shovels are more productive and why the combination of all the features which only Hough-designed units offer the user make "PAYLOADER" a better buy than any other equipment.

If you are not familiar with these new models your "PAYLOADER" distributor will be glad to demonstrate them to you.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

11-B-1b

you DELIVER more



with NO STOP for shifts

. . . which the "complete" power-shift transmission of these "PAYLOADER" units provides by saving time and effort.

There is no need to bring HOUGH tractor-shovels to a stop for a "range" shift. All shifts in both forward and reverse can be made "on the go".

When you travel over muddy or slippery terrain, "power-transfer" differentials automatically transfer more power to the wheels with the best footing. This is another STANDARD on all four-wheel-drive "PAYLOADER" tractor-shovels.

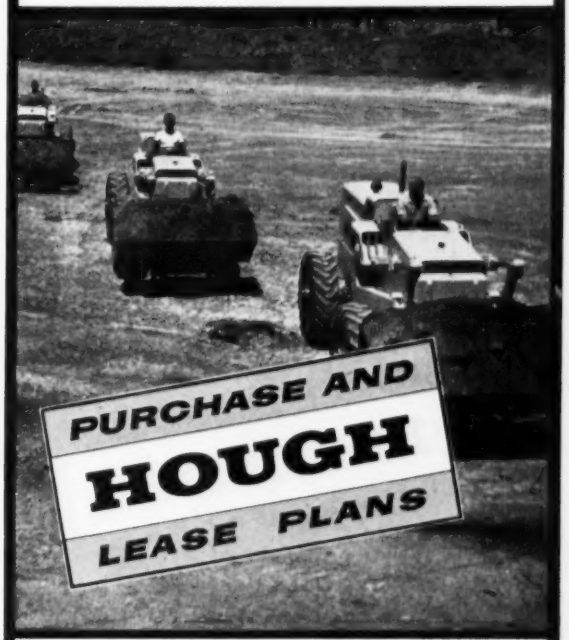
Therefore, if you GET more at the start, if you SPILL less during travel, if you can travel faster with NO STOPS for shifting and better traction . . . you are going to be able to ***deliver*** MORE . . . and, after all, that's what counts.

Only "PAYLOADER" tractor-shovels have all of these PRODUCTIVE features which spell more PROFITABLE operations for the user.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

11-8-1c

you GET more



with GREATER choice

. . . of any and all kinds of financing.

What best fits your needs?

Do you want to purchase on a ***time payment*** plan? Your "PAYLOADER" distributor can offer you such a plan tailored to various periods to suit your needs.

Do you want a ***leasing plan**** with an ***option to purchase?*** He has a number of these which can be adapted to fit your requirements and preferences.

Do you want a straight ***leasing plan**** without a purchase option? He can provide "PAYLOADER" equipment for your operations on a straight leasing plan.*

Your distributor of "PAYLOADER" machines now has at his disposal the broadest and most complete set of financing plans and arrangements being offered.

He will be glad to discuss your needs for the finest equipment and offer you the greatest choice of terms. He will consider trade-ins.

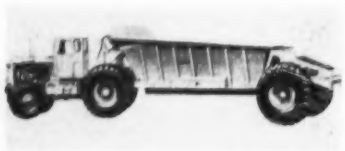
He'll even take cash!

Consult him at once.

*(available in the continental U.S.A.)

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

11-8-1d



BETTER BOTTOM DUMP — Athey's new 40-ton capacity bottom dump trailer has a capacity equal to four times its own weight. Called the PW20, the new bottom dump is constructed of T-I steel, the new high-strength, high-alloy metal developed by U.S. Steel Corp. Another feature is a new rear door, which opens simultaneously with the bottom doors and permits material to flow smoothly out to the rear. Together with a higher rear clearance (5 in., this rear door eliminates hang-up and the need for pusher units at the dump or fill. The PW-20 can easily ride out over its dumped load, according to the manufacturer. To increase funneling action and speed of discharge, the trailer has 18-deg side angles and 15 ft 10½-in. by 6-ft bottom doors. The PW20 can spread or windrow loads as well as dump instantly. An air-release opens the doors under hydraulic pressure for controlled dumps. When closed, the doors are locked so that the hydraulic system is relieved of all load. Matched to the Caterpillar DW20 tractor, the PW20 can make 90-deg turns in 38 1/3 ft. Top speed with the Cat DW20 is 32.1 mph. Average side loading height is 8¾ ft, and ground clearance with the doors closed is 29½ in.—**Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.**

NEW JERSEY TURNPIKE "takes the measure"



Photo courtesy New Jersey Turnpike Authority

of the new BERGER POLARA



The Project: Widening 22 mile stretch of Turnpike, including 19 structures.

Contractor: Reid Contracting Co., Woodbridge, N. J.

Harry Christie, Chief Engineer at Reid Contracting Co., is an engineer who isn't averse to cutting costs provided it doesn't mean cutting corners. That's why he equipped his three surveying crews with the budget-priced Berger Polara. Its 5½" horizontal circle, reading to one minute, and resolving power of four seconds, provided the right combination for the job at hand—just as other Turnpike jobs called for Berger's more critically precise 6¼" Engineers' Transit.

Polara was put right to work, setting bearing lines on piers and abutments, setting anchor bolts to ⅛", lining up culverts and setting grades. Typical comments of the crews: "Clearest optics we've ever seen." "Excellent controls—almost impossible to make a mistake." "Rugged and dependable."

"In widening the structures," said Harry Christie, "we found we couldn't rely on the old plans to match the line of abutment. This meant "feeling out" every inch of the way with our Polaras. And every time we swung a steel section into position and saw how nicely it fit, we knew we had a mighty good transit."

Put yourself behind a Polara—as so many contractors are doing. See how this instrument fills your need for an all-around utility transit at a budget price. Send for the complete details today.

C. L. Berger & Sons, Inc., 53 Williams St., Boston 19



Berger 6¼" Engineers' Transit first in engineering, first with engineers.

THE BEST IN SIGHT IS

BERGER

Engineering and Surveying Instruments . . . Since 1871

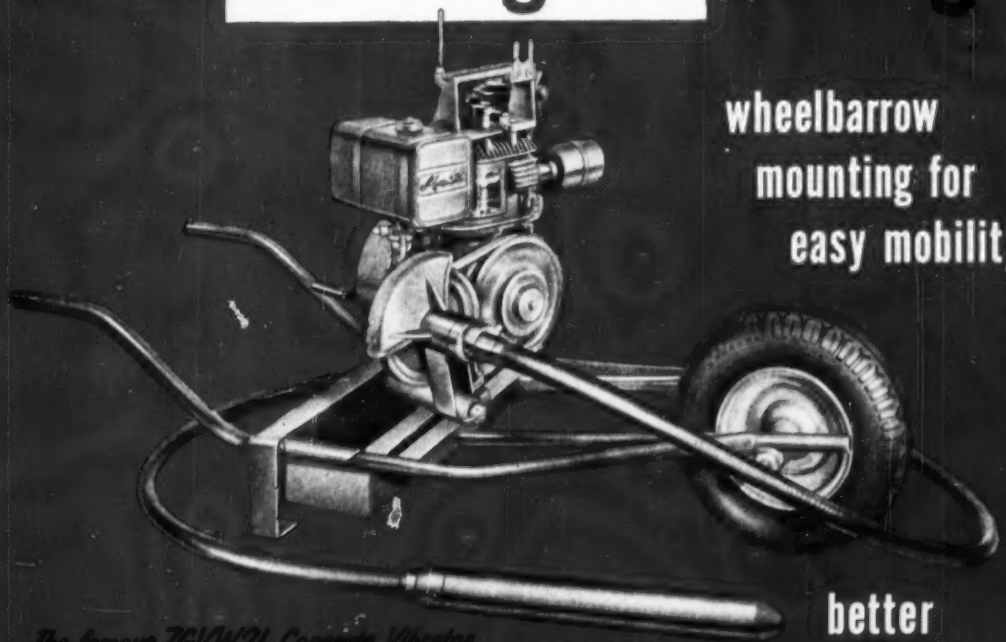


BRIGHT LIGHT—A new battery-operated flasher safety light, said to be visible for over two miles and to afford up to 90 days of continuous operation without servicing or battery replacement, is announced by R. D. Fageol Co. Called the Model HD-1-7, the new uni-directional light features a convex optical plastic lens. Other features include Fageol's Dependa-Pak timer, an eight-cell battery, and a heavy gage steel case and cover. The light locks to the barricade to protect it against theft or vandalism. It is available with a red, amber, blue, green, or clear optical plastic lens.—**R. D. Fageol Co., Kent, O.**

continued on page 211

now, in concrete vibrators, too,

if it's Remington, it's right!



wheelbarrow mounting for easy mobility!

better concrete at lower cost!

The famous 7GVW21 Concrete Vibrator has 4 great features that make it right for you!

- Dependably powered by rugged single-cylinder, 4-cycle air-cooled gasoline engine with countershaft drive and automatic clutch.
- This versatile unit can also be used to power attachments for concrete surfacing, sanding, wire brushing, pumping and other jobs.
- Long-reaching flexible shaft made up of 7 ft. or 14 ft. sections. Extra sections can be added as needed.
- Unit can be moved right along with the work on pneumatic-tired wheelbarrow mounting. This unit is also available on 360° swivel round base mounting.

MODEL 7GVW21 *5 HP concrete vibrator. Available with 2⅛" x 20" 7,000 RPM vibrating head or 2⅜" x 12" 10,000 RPM vibrating head.*

Remington

MALL TOOL COMPANY
Division of Remington Arms Company, Inc.
Bridgeport 2, Conn.

Mall®



Electric circular saws are best buys for every purpose



Electric impact wrenches speed up work on heavy equipment

Specifications subject to change without notice.

You'll use less cement, coarser aggregate and produce denser, more uniform concrete...and do it in fewer man-hours!

That's a mighty big order to be sure! But it's being done every day on every kind of concrete job by these indispensable vibrators by Remington—the newest name in power tools and famous for 141 years for quality in sporting firearms and ammunition.

You name it...Mall Tool Company, Division of Remington Arms Company, Inc., gives you a vibrator for every application from small form work to large mass concrete compaction. Over a dozen models, most available in gasoline engine, electric or pneumatic, including the new 1-man 115-volt vibrator with motor-in-head. Let us send you our latest catalog today!

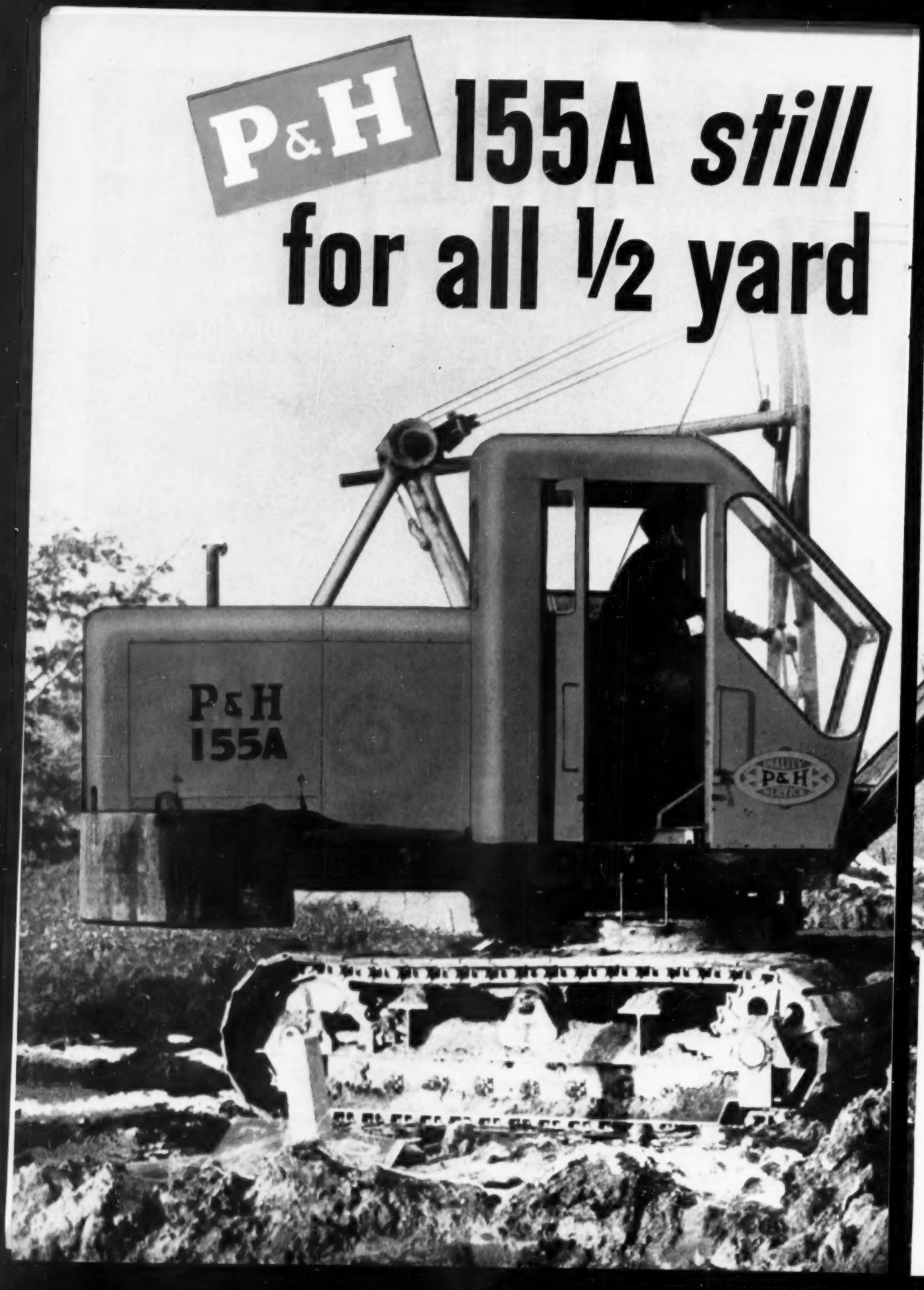
MALL TOOL COMPANY
Division of Remington Arms Company, Inc., CME-11
Bridgeport 2, Conn.

Please send free catalog on Construction Tools.

NAME_____

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CITY_____ ZONE____ STATE_____


P&H
155A still
for all ½ yard
P&H
155A
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unsurpassed applications



The P&H Model 155A is the most versatile machine you can buy in the ½ cu. yd. class! Whether it be hoe, shovel or crane, changeovers are made quickly with the P&H *exclusive* drum arrangement. Independent swing and propel, another P&H *exclusive,* mean simultaneous motions for easier, simpler performance.

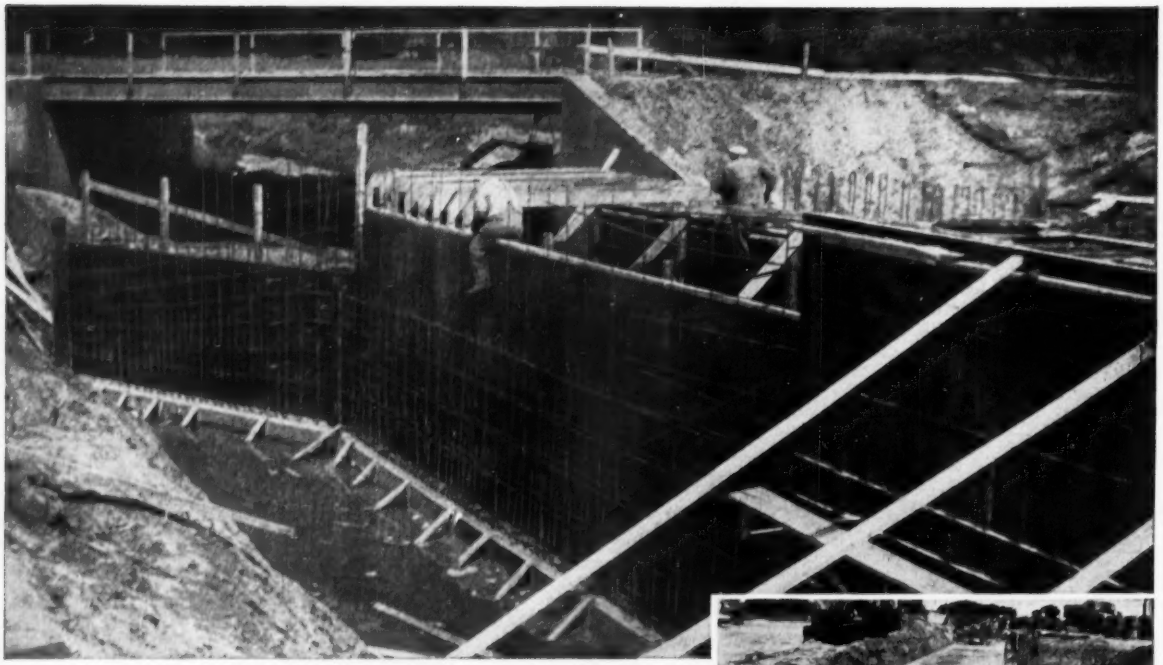
Independent planetary boom hoist is triple safe for accurate control with boom lowering always done under power. This is but one of many features on the P&H Model 155A that is *STANDARD EQUIPMENT* . . . and at no additional cost.

In production, the 155A is unexcelled. Built with famous P&H stability and all-welded strength, it handles maximum loads with greatest speed, safety and efficiency.

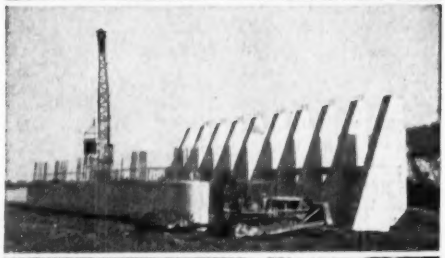
You start saving money when you invest in the P&H Model 155A . . . you continue to save money with minimum maintenance . . . you also make money because of its steady, profitable production.

HARNISCHFEGER

Construction & Mining Division
Milwaukee 46, Wisconsin









forming Bridges, Culverts, Piers?

UNI-FORM *PANELS*

Save LABOR, MATERIAL, TIME!

Simple mechanical assembly and pre-engineered techniques for handling virtually any forming condition make UNI-FORM Panels your best bet for fast, low cost forming. Successful contractors everywhere are using the UNI-FORM system to form bridges, overpasses, culverts, piers and abutments, because their experience has shown that UNI-FORM Panels give them the speed, flexibility and economy required to handle this complex type of forming at the lowest possible cost.

Let us prove our point. Send a set of plans for detailed forming specifications, recommendations and cost analysis. There's no obligation, of course.

Here Are The Basic Elements:



2. UNI-FORM Tie

3. UNI-FORM Tie Key

1. Steel framed, plywood faced UNI-FORM Panel

P1501

UNIVERSAL FORM CLAMP CO.

Concrete Form Specialists Since 1912

1238 North Kostner Avenue, Chicago 51, Illinois

BRANCH OFFICES AND WAREHOUSES

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24901 Lakeland Blvd.	1020 N. Kresson St.	1401 Howell Mill Rd., N.W.



WIRE BRAID HOSE—Thermoid's new wire braid hose, called Thunderbird, features a heavy gage, Neoprene tube compounded to resist hot or cold oil without flaking or swelling. Designed especially for rugged out-of-door use, the hose sustains working pressures up to 400 psi air and 2,000 psi water. Its carcass incorporates high tensile steel wire braid that does not interfere with flexibility. Ten sizes from ⅜-in. up to 4-in. dia are available. It is furnished in lengths up to 50 ft. Despite its strength, Thunderbird hose weighs only 27 lb per 100 ft in the ⅜-in. size.—**Thermoid Co., 200 Whitehead Rd., Trenton, N.J.**



PORTABLE MAGAZINE—Austin Powder Co.'s new portable explosives magazine, which can be hauled from job to job by a light truck or tractor, has the capacity for more than the average daily requirements of explosives, detonating fuse, and caps. The magazine is constructed of welded steel and separated into two compartments that can hold about 10,000 lb of explosives and accessories. Sides and top are wood lined while the floor is covered with masonite. Loading and unloading are said to be simplified by five doors, two of which are located on either side with one at the rear. An important feature of the portable magazine is the fifth-

Teamed for DEPENDABILITY



BLAW-KNOX MODEL 85 ROAD WIDENER AT WORK NEAR KNOXVILLE, TENNESSEE. POWER: CONTINENTAL RED SEAL.

...two Famous Names: Continental and Blaw-Knox

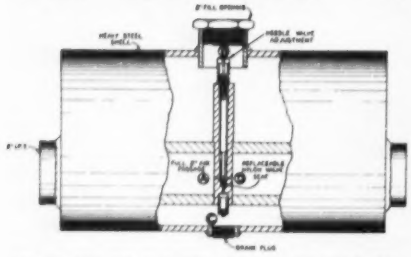
Like so many other leading builders of construction machinery, Blaw-Knox offers its customers the tangible PLUS-value of Continental power. Continental engineers each power plant to the specialized requirements of its job, for highest dependability, longest trouble-free life.

WORLD'S LEADING INDEPENDENT MANUFACTURER OF INTERNAL COMBUSTION ENGINES, CONTINENTAL MOTORS OPERATES PLANTS IN ATLANTA, DALLAS, DETROIT, MILWAUKEE, MUSKEGON, AND TOLEDO, AND IN ST. THOMAS, ONT., PRODUCING AIR-COOLED AND LIQUID-COOLED ENGINES FOR USE ON LAND, AT SEA AND IN THE AIR.

Continental Motors Corporation
MUSKEGON • MICHIGAN

FACTORY-AUTHORIZED SERVICE AND GENUINE RED SEAL PARTS ARE AVAILABLE EVERYWHERE

LARGE CAPACITY--LOW COST
Air Line Oiler--Alcohol Feeder



CUT AWAY VIEW SHOWING DESIGN FEATURES

MODEL 250 JUMBO JR.
AIR LINE OILER 2½ GAL. $100.

MODEL 500 JUMBO SR.
AIR LINE OILER 5 GAL. $150.

MODEL 250A AIR LINE
ANTI FREEZE FEEDER 2½ GAL. $120.

MODEL 500A AIR LINE
ANTI FREEZE FEEDER 5 GAL. $180.

Originally designed as a built-in component of the Clifden Air-Cat, these jumbo size Air Line units are now available for general use. The full 2" passage allows maximum flow of air to equipment. The Air Line Oiler is particularly suited for the new, large drills, since they are the only unit on the market with capacity to keep a 4½" drill working a full shift on one filling and with large enough air passage to allow maximum air flow to drill. The Anti-Freeze Feeder will enable the rock contractor to eliminate the annoyance of air equipment freeze-ups during cold weather, and yet, because of the well designed valve regulation, the flow of anti-freeze can be controlled to as little as one drop per minute. This is a very important feature since too much anti-freeze will flush lubricating oil out of the air equipment.

CLIFDEN ROCK TOOL CO., INC.
BOX 83 ROCKAWAY, N. J.

AD 55-1

AIR-CAT
ROCK DRILL TRACK

HOLLOW DRILL STEEL
CARBIDE TIPPED DRILL RODS
YELLOW BRUTE AIR HOSE
AIR LINE MANIFOLDS
CARBIDE ROCK BITS
PAVEMENT BREAKER TOOLS
HAND CHIPPING HAMMER TOOLS
CARBURIZED DRILL STEEL
LONG HOLE COUPLINGS & SHANKS



Use it as a **WELDER** on building and repair. Use it for **POWER** to run tools, lights, motors

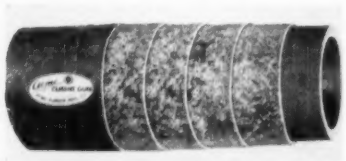
You can save hundreds of dollars and make all your jobs more profitable by doing your own welding. No contractor can afford to be without this valuable 2-in-1 unit that lets you weld anywhere for repair, maintenance and construction—and with the flip of a switch, gives you 110 volts AC current for running tools, lights, motors, etc. Use your own men—save that extra cost of getting outside help. Write today for complete details, no obligation, to **Hobart Brothers Co., Box 6117, Troy, Ohio. Phone FE 2-1223.**

"ONE OF THE WORLD'S LARGEST BUILDERS OF ARC WELDING EQUIPMENT"
HOBART WELDERS

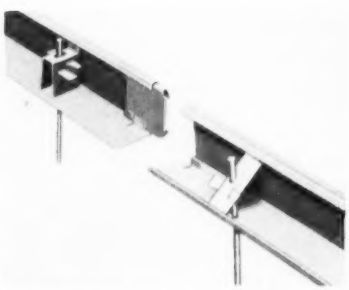
☐ Check here for **FREE** welder's vest pocket guide

HOBART BROTHERS CO., Box 6117, TROY, OHIO, U.S.A.
Send information on ☐ Welder-Power Combination
☐ Gas Drive Arc Welder only ☐ Air-cooled ☐ Water-cooled
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wheel design of the front axle, which assures maneuverability even in close quarters. The trailer is 14 ft long, 6 1/3 ft wide and 46½ in. high.—**Austin Powder Co., Cleveland 13, O.**



HANDLES CONCRETE—A new line of hose for guniting applications is announced by Acme Mfg. Co. Called Acme cement gun hose, it is designed for spraying wet or dry cement. Four sizes, ranging from 1 through 2-in. dia are available. Weights vary from 84 to 159-lb-per-100 ft. The hose carcass, made with a ¼-in. thick pure gum tube, consists of four plies of wrapped duck protected by a friction fabric cover.—**Acme Mfg. Co., Div of Acme-Hamilton Mfg. Corp., 115 Meade St., Trenton, N.J.**



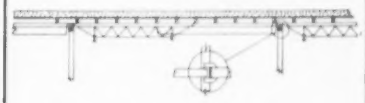
FULL LINE—Chain Belt Co.'s General Road Machines Div. has expanded its line of highway forms so that it now offers a size and type to meet any requirement, according to the company. The Rex line offers both single and double-wedge types, and these have specially designed slide locks that make them fully interchangeable. Formed of ¼-in. alloy steel plate, the slide locks have top and bottom rolls designed to give added strength. The forms are 100% welded, with no bolts or rivets. The top flange gives a full 2 in. tread to accommodate traveling form equipment. Slotted stake holes with two wedge keys provide automatic alignment.—**Chain Belt Co., 4701 W. Greenfield Ave., Milwaukee 1, Wis.**

continued on page 215

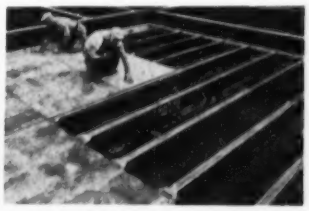




Page 6. Spanall installs fast and easy.



Page 5. Spanall applies to any type of poured concrete construction.

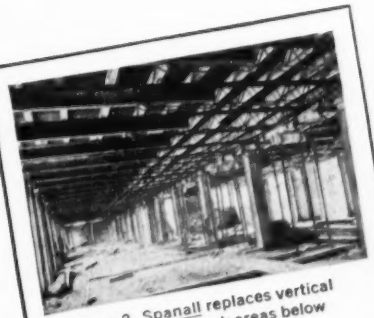


Page 7. Plywood decking laid directly on Spanall.

Newest Catalog features new way to save time, cut costs

Here is practical, profitable information about Spanall, the popular, new, all-metal Horizontal Shoring for concrete forms. Photos, charts and drawings clearly illustrate how Spanall is erected, stripped and stored—with new ease and speed... how Spanall adjusts quickly to any required span length—how Spanall forever eliminates cumbersome, costly vertical shoring... and actually saves as much as 40% in both time and money.

Get *all* the facts about Spanall—it could provide just the competitive advantage you'll need for 1957.



Page 2. Spanall replaces vertical shoring, frees work areas below forms.

Paste on Postcard or paste on your letterhead

SPANALL OF THE AMERICAS, INC.
787 United Nations Plaza, New York 17, N. Y.

Gentlemen—Please send, without cost or obligation, _____ copies of the new Spanall Catalog.

NAME _____ POSITION _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____



One of the Heston fleet—an International L-190 with RD-406 engine, equipped with a 5-speed Fuller 5-A-62 Transmission.

FULLER Transmissions help keep mixers rolling on Heston's roughest jobs

"We are well satisfied with our 5-speed Fuller Transmissions. They see some rough service out on the job sites, and they're plenty rugged. Dependability like that is important to us, because concrete has to be delivered strictly on schedule," says Earl Geiss, Equipment Superintendent of Heston Concrete Corp., Indianapolis.

All 25 Heston trucks are equipped with the original 5-speed 5-A-62 Fuller Transmissions working behind RD-406 engines. Fuller Transmissions "put the power through" to deliver ready-mix concrete to the pour site even in the toughest sticky mud or sand off-road areas.

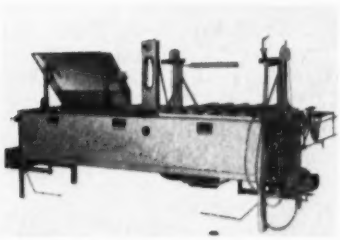
This satisfying performance can be yours, when you equip your trucks with Fuller Transmissions. From over 110 models available for rubber-tired equipment, you will find a Fuller Transmission designed to do *your* job better at less cost.

FULLER

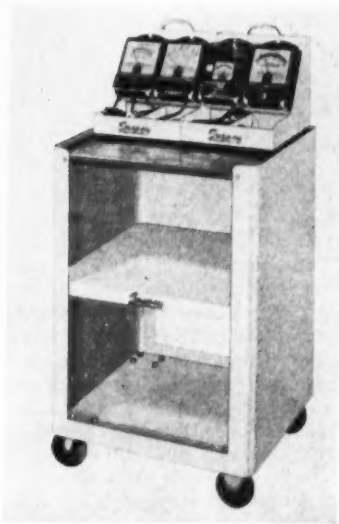
TRANSMISSIONS

FULLER MANUFACTURING COMPANY, Transmission Division, Kalamazoo, Mich.

Unit Drop Forge Division, Milwaukee 1, Wisconsin • Shuler Axle Company, Louisville, Kentucky (Subsidiary) • Sales & Service, All Products, Western District Branch, Oakland 6, California and Southwest District Office, Tulsa 3, Oklahoma.



COMPLETE SHOP—A one-piece radiator servicing shop, measuring only 11½x3½-ft, has been introduced by Inland Mfg. Co. The unit consists of a flow test machine, a hot cleaning vat, and a test and repair bench. It contains everything needed to test, clean, or repair radiators, and occupies considerably less space than separate units. The vat and bench are equipped with electric elevators that raise and lower at the touch of a switch so that heavy lifting is unnecessary.—**Inland Mfg. Co., 1108 Jackson St., Dept. RS165, Omaha 2, Neb.**

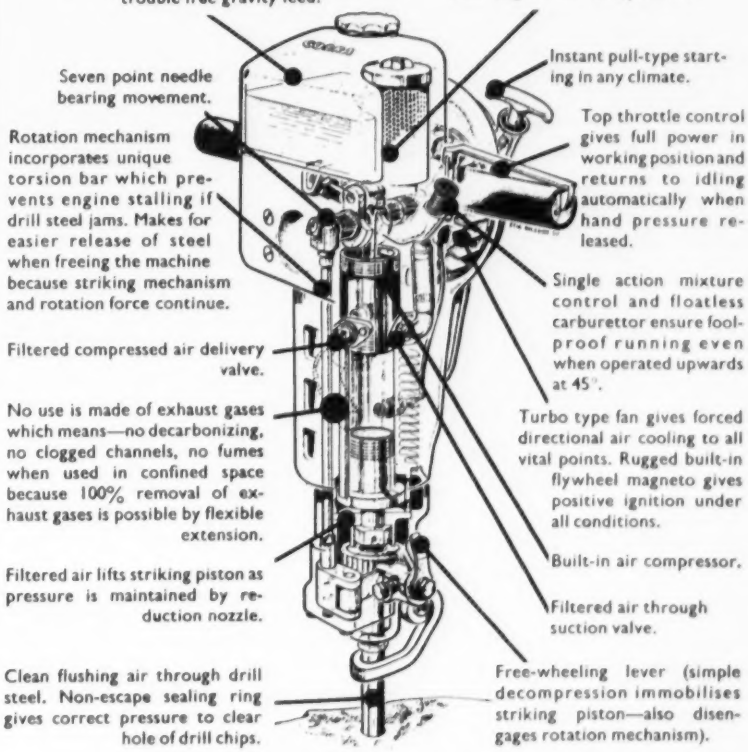


EASILY USED—A new set of engine and electric system testers, now available from Snap-on Tool Co., can be used by any mechanic with a minimum of instruction. There is no need for computations or allowances, and each tester has a minimum number of adjustments and connections. The complete set, which will handle all cars and most trucks, consists of a generator-regulator tester, tach-dwell meter, ignition analyzer, exhaust gas analyzer, two tune-up meter racks, and a roll

NEW COBRA

WORLD'S LIGHTEST MOTOR DRILL

After extensive field testing the new 100% self-contained motor drill/breaker from Atlas Copco is on the market. The COBRA is a versatile, portable tool weighing only 53 lbs, drilling to 13 ft at 26 ft per hour. The COBRA can be used at high altitudes up to 11,000 ft, and is specially designed for easy carrying. It is quickly converted to light breaker, and embodies all the outstanding features shown below, which make it the most up-to-date machine of its kind and one that has already proved its worth in many parts of the globe.



See the Cobra in action. Write or phone for further information.
Sales and service depots from coast to coast

Atlas Copco

ATLAS COPCO EASTERN INC., P.O. Box 2568, Paterson 25, N.J. Phone Armory 4-3310

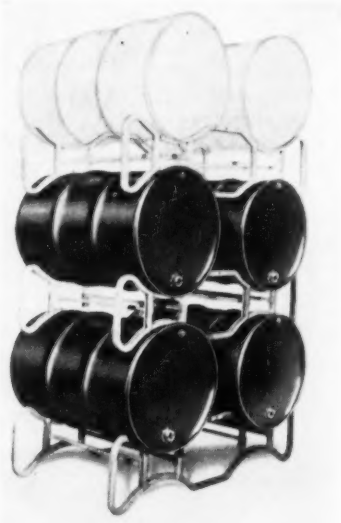
ATLAS COPCO CANADA LTD., Montreal Airport, Quebec. Phone Melrose 1-5571

ATLAS COPCO PACIFIC INC., 930 Brittan Ave., San Carlos, Calif. Phone Lytel 1-0375

ATLAS COPCO MEXICANA S.A., Apartado Postal 56, Torreón, Coahuila. Phone 39-07

OST/84

stand. Since they require no outside power, they can be used anywhere. Each meter rack holds two testers in position, but they can be removed individually when desired. The roll stand, measuring 20x22x31-in., has four 4-in. swivel casters for greater mobility. The base of the meter racks has compartments for storage of leads and adaptors. The generator-regulator tester has a 15-v range in addition to a 60-v range for heavy-duty ignition systems. The combination tachometer - dwell-meter is designed for use on 6, 12, and 24-v systems, and it performs the jobs of a tachometer and a cam angle meter. The ignition analyzer performs many tests, including coil and condenser analyzing. The exhaust gas analyzer is designed for use on either gasoline or LPG-type engines with a single exhaust pipe. It checks the air-fuel ratio for economical engine operation and proper carburetor setting.—**Snap-on Tools Corp., 8028 28th Ave., Kenosha, Wis.**



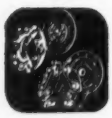
BARREL RACKS—A steel rack designed to permit the handling and stacking of loaded or empty drums with standard fork lift trucks has been announced by the Pressed Steel Div. of Republic Steel. The new drum rack supports two loaded barrels and makes easy the stacking of pairs of containers to any practical height. Individual drums or pairs of drums can readily be removed without excessive handling of other drums. The fork lift truck can remove drums from either the front, back or side of the stack.—**Pressed Steel Div., Republic Steel, 6100 Truscon Ave., Cleveland, O.**



NEW SCOOPMOBILE—A 1½-yd model of its Scoopmobile loader has been introduced by Mixermobile Manufacturers, Inc. The bucket on this loader, which has 100% breakout action, clears a path the full width of the wheels

ROCKFORD





Small Spring Loaded



Heavy Duty Spring Loaded



Oil or Dry Multiple Disc



Heavy Duty Over Center



Power Take-Offs



Speed Reducers

A Clutch Plate—for Every Use

ROCKFORD CLUTCHES are made with a wide variety of friction plates—to meet your specific needs exactly. Organic, metallic, segment or Morlife[10] cerametalic facings provide the right torque, wear and heat resistance characteristics. Cushioning arrangements minimize the effects of shock-load engagements. Dampeners blot out vibration and chatter. Pressure plates of high tensile strength resist centrifugal force of modern high speed engines. These ROCKFORD advantages will help you select the *right* friction clutch for your particular needs.

BW **SEND FOR THIS HANDY BULLETIN** Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

1331 Eighteenth Ave., Rockford, Ill., U.S.A.

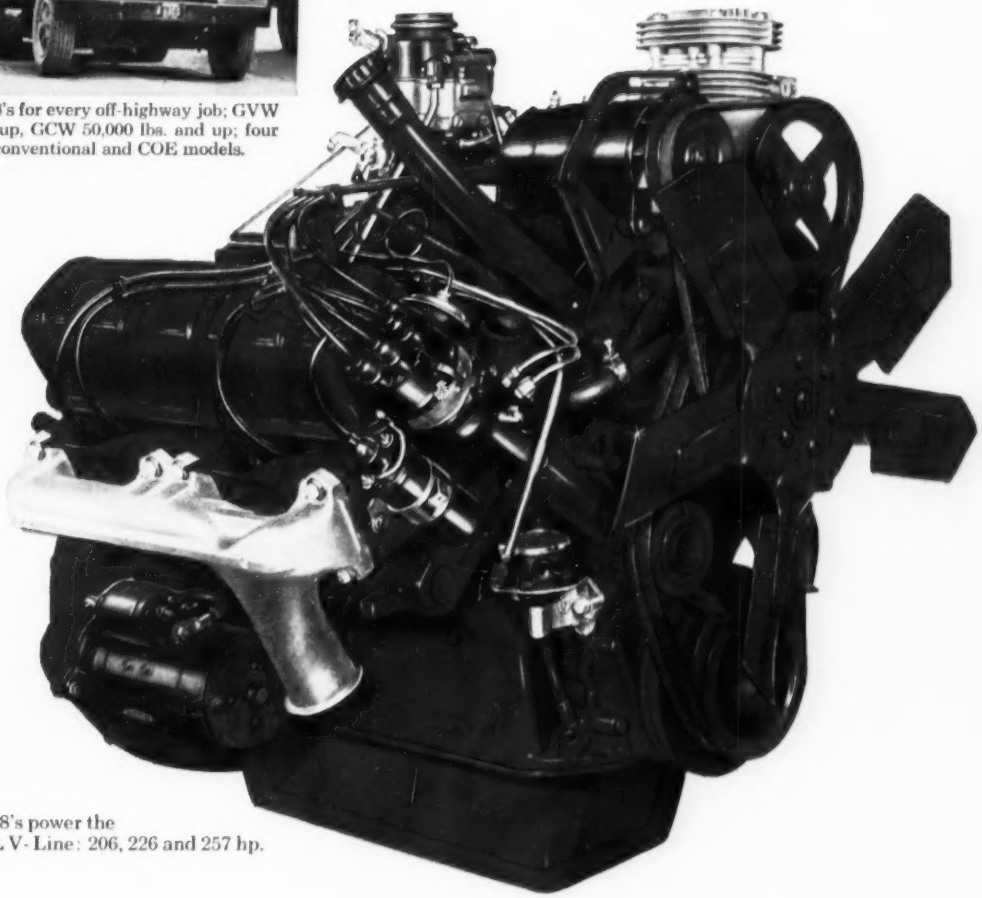
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES



Heavy-duty V-8's for every off-highway job; GVW 24,000 lbs. and up, GCW 50,000 lbs. and up; four and six-wheel; conventional and COE models.

Most GO under any truck hood!



Three great V-8's power the INTERNATIONAL V-Line: 206, 226 and 257 hp.

INTERNATIONAL HEAVY-DUTY V-8's

Introduced last year—and smashing performance records ever since—INTERNATIONAL Heavy-Duty V-8's give you the most productive V-8 power in any truck.

Make more trips on short hauls! Save more time on long hauls! Get your loads moving faster, keep them rolling with less shifting. More ton-miles per gallon, too.

INTERNATIONAL V-8's make more money for their users because they do what other trucks cannot. Get the facts today from your nearby INTERNATIONAL Truck Dealer or Branch. International Harvester Company, Chicago, Illinois.

Motor Trucks, Crawler Tractors
Construction Equipment,
McCormick® Farm Equipment
and Farmall® Tractors

Fleet cost records prove

INTERNATIONAL TRUCKS cost least to own!



Fights Deposits!

Keep out power-robbing deposits in your heavy duty Diesels. Refill with Sinclair SUPER TENOL® for the tough jobs! It helps to eliminate deposits of carbon, varnish and sludge that impair engine efficiency. SUPER TENOL is specially engineered to fight the effects of high temperature, engine over-load and continuous stop-and-go operation. Your engines last longer!

Refill now with Sinclair SUPER TENOL. Contact your local Sinclair Representative or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR

SUPER TENOL MOTOR OIL

CM HOISTS

...choice of the wise buyer who compares



CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light... easy to handle because they are constructed of the strongest alloys of steel and aluminum. Equipped with famous CM-Alloy flexible, welded alloy steel load chain.

CM CYCLONE

- Capacities from ½ to 10 ton.
- 1-ton model weighs only 36 pounds.
- 96% efficient—easy to operate.
- Lifetime lubricated.



CM PULLER

- Capacities ¾, 1½, 3 and 6 ton.
- ¾-ton model weighs only 13 lbs.
- Compact: stores in tool box.
- Lifts or pulls at any angle.
- Lifetime lubricated.

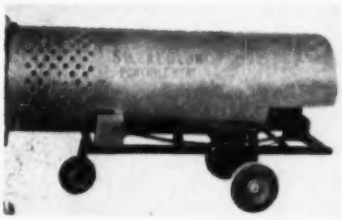
Write for catalog and name of your nearest CM dealer.

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CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.

EQUIPMENT NEWS . . . continued

—a feature that cuts down on tire damage. Four-wheel planetary drive, power steering, power shift and power brakes are standard equipment. The new unit, called the LD5P, can be obtained with either gasoline or diesel engine. A lift fork frame, concrete hopper, backfill blade, and rotary snow plow are among the available attachments.—**Mixermobile Mfgrs., Inc., P.O. Box 7527, Portland, Ore.**



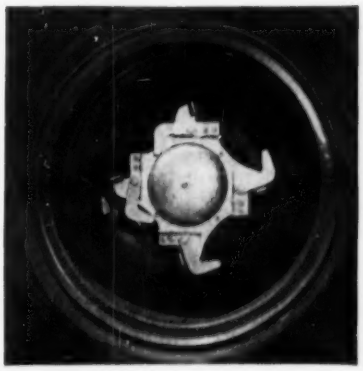
NEW CUB — Latest addition to the Silent Glow line of portable heaters is the model 450 Cub, a high capacity unit that delivers 450,000 btu's per hr. There is no exposed flame and automatic heat control prevents dangerous overheating. Continuous ignition prevents flameout, smoke, and odor, and an electric solenoid valve eliminates the dangers caused by leaky hand valves. The model 450 is supported and moved by heavy-duty rubber-tired wheels.—**Silent Glow Oil Burner Corp., 850 Windsor St., Hartford 5, Conn.**



SELF-LOCKING BOLT — Nylon plugs that wedge opposite mating threads together when wrenching is stopped make new Nylok bolts self-locking and vibration-proof. Intended to withstand the most extreme vibration, bolts grow tighter after they are applied



It warns men he can't!



BULLARD MECHANICAL

Back-Up Alarm

Almost every day on some crowded job site, with trucks maneuvering forwards and backwards, a driver grinds into reverse... rear vision is blocked... then ... tragedy!

This simple, failproof, mechanical back-up alarm never forgets to warn men behind. A loud klaxon-like bell rings the minute wheels turn in reverse. It is a complete self-contained unit that can be easily installed on almost all vehicles with conventional wheels.

Write for technical literature, installation instructions and test reports

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

E. D. BULLARD COMPANY, Sausalito, California

KOEHRING WORK CAPACITY *in action . . .*





Pre-cast concrete bents, weighing 9 to 14 tons, had to be erected on construction of a new school. Above photo shows how the contractor got the job done with a Koehring 305 truck crane. It has a top lifting capacity of 25 tons, and boom lengths from 30 to 100 feet, plus 15 to 30 feet of jib — handles maximum 130-foot boom and jib with low A-frame. Butt-connected crane boom is safe, solid. Inserts are easily changed — only 2 bolts per corner.

Sewer installation — 3 miles of 8-inch pipe, 5 miles of 6-inch pipe, and 6 miles of 4-inch pipe were layed in a hurry, with the help of this Koehring ½-yard hoe. Edging along the curb, pole-line, trees, it cut trench through black-top pavement and set pipe in place at a rate of 800 feet per day. The heavy-duty 205 hoe has a maximum digging depth of 17¾ feet — and widths up to 31 inches over side-cutters.

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.

45-ton roustabout — installing heavy machinery in the oil field, the new 445 truck crane (right) shows off its muscles. Heaviest load was a 23-ton mud pump — an easy lift for the big Koehring 445! It can pick up 45 tons with 40-foot boom at 15-foot radius. On high-lift work, it handles up to 120 feet of main boom, and 15 to 30-foot jib. Top travel speed on this mobile, heavy-lift crane is 31.8 mph.



A new 2-yard — Another size has been added to the Koehring *"work capacity"* team — a heavy-duty 2-yard, with 25-foot deep-section shovel boom, and 18½-foot twin dipper sticks. You'll like the 805's power, strength, and stability in heavy digging — and *extra capacity* as a clamshell, dragline, or crane (see lift rating chart below). Want to know more about it? Call Koehring distributor *right now.*



Look at the reach of the high-lift crane (below), starting construction on a new thruway. Boom lengths on this big Koehring 1205 range from 60 to 170 feet — and that's not all! When extra reach is needed, it handles up to *190 feet* of boom and jib. 90% power-assist on main-drum clutches gives operator light lever-pull and sensitive "feel" of load for precision lift work at every boom length.



Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs. 14,600 lbs.	at 12-ft. radius at 20-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-ft. radius at 30-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs. 40,000 lbs.	at 15 ft. radius at 25-ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,200 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius

Want more information? See Koehring distributor.

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(Advertisement)



THE BUFFALO-SPRINGFIELD K-45 KOMPACTOR

How to select compaction equipment

The logical question to ask yourself when you are ready to buy new compaction equipment is: "Exactly what do I need the equipment for and how will I use it?"

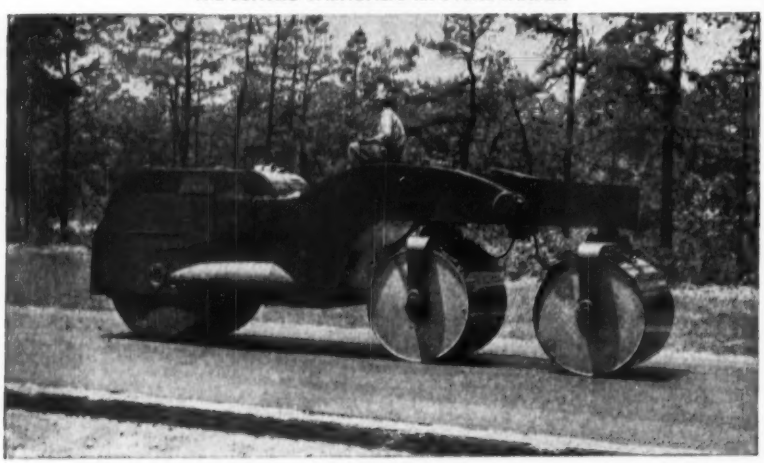
BASE FILL COMPACTION—This type of compaction demands equipment that will handle a wide variety of materials, give you the highest degree of compaction with the fewest passes. Buffalo-Springfield's revolutionary K-45 Kompactor is proving a real money-making answer for this type of work. It is self-propelled, relies on the "Interrupted Pressure Principle." All compaction effort is directed downward. Contractors testify they are meeting density requirements in one-fourth the time normally required with other compaction equipment.

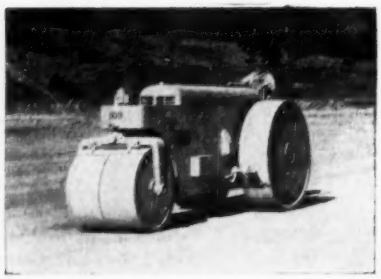
FINE GRADE FINISHING — Buffalo-Springfield offers six 3-wheel rollers, ranging in capacity from 5 to 15 tons, to handle the large variety of materials found in fills, subgrades and unfinished bituminous pavements. The variable-weight 3-wheel roller is ruggedly built for years and years of hard, maintenance-free work.

Buffalo-Springfield's thoroughly-proved 3-axle tandem "walking beam" roller provides up to 60% greater tonnage compacted per day in superhighway construction, airport and military establishment jobs where specifications are extra strict.

ASPHALT FINISHING — Two-axle Tandem Rollers are designed especially for all surface finishing jobs. Ranging from 5 to 16 tons, Buffalo-Springfield Tandems are used for

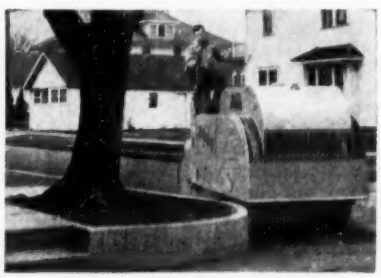
THE BUFFALO-SPRINGFIELD KX-3 AXLE TANDEM





3-WHEEL ROLLERS

heavy-duty highway and public works projects, and all types of finishing, maintenance and repair work. A wide selection of models for the biggest to the smallest jobs are designed for long-life and profitable operation.



TWO AXLE TANDEMS

SHORT ROLLING JOBS—Buffalo-Springfield's 3-5 ton portable roller is widely used for rolling driveways, sidewalks, parking and playground areas, and for patching and light finishing jobs. It is highly maneuverable and portable from job-to-job. Write today for full information on the type of equipment you need—or see your nearest distributor for an on-the-job demonstration.

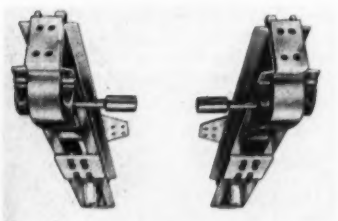


3-5 TON PORTABLE TANDEM

BUFFALO-SPRINGFIELD
Roller Division-Koehring Company
SPRINGFIELD, OHIO

because the plastic memory of the nylon plugs causes them to seek their original shape after being spread out during wrenching. When properly seated, the nylon plug effectively blocks fluid flow around the helix of the threads. According to the manufacturer, the bolt can be backed off and wrenched tight repeatedly without damage to the threads, seating surfaces, or holding power. A range of sizes from No. 10 up to 1-in. dia is available.—**Bolt & Chain Div., Republic Steel Corp., 1970 Carter Rd., Cleveland 13, O.**

ADDS ANTI-FREEZE—For the first time, the Valvoline Oil Co. has added anti-freeze to its list of products. Two types, Valvoline permanent and Valvoline Methanol, are available. The permanent type is designed to give a full winter's protection for both cars and trucks. In addition to protecing against freezing, its high boiling point is said to eliminate evaporation. It contains an additive that guards against rust, corrosion, and foaming. Both the permanent and Methanol types are packaged in 55-gal drums, 1-gal cans, and 1 qt cans.—**Valvoline Oil Co., Freedom, Pa.**



SHOP CRANES—A new line of over-riding cranes has been announced by the Becker Crane and Conveyor Co. The new models are available in capacities ranging from one to 10 tons and for spans up to 50 ft. Hand-pushed, hand-chain-driven, or motor-driven models are available. The overhead cranes can be purchased as a completely assembled unit or they can be bought in packaged kit form for assembly at the shop. Components include end trucks with all necessary bridge beam attachment fittings, motor drive parts, controls and electrification equipment. Drawings for in-the-shop crane assembly are provided. On hand-chain-driven

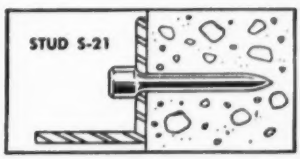
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Just one of *101* Stud Driver uses!



No outside power source required —

Fasten angle iron to concrete or steel in seconds with the Remington Stud Driver



Recommended Stud for application pictured above—¼" Remington S-21 Stud with 22 caliber Power Load. Stud sets arrow-straight, iron is anchored permanently. Eliminates pre-drilling—no lost time.

Just a squeeze of the trigger anchors structural angle to concrete—without pre-drilling! This cartridge-powered fastening tool sets either ¼" or ⅜" diameter studs in steel or concrete . . . up to 6 per minute, either size. Over 40 Remington Studs to choose from, plus 22 and 32 caliber Power Loads scientifically graded to furnish *exact* power you need. Barrel change-over takes only 90 seconds *right on the job.* Take the tool anywhere, use it anywhere for light, medium or heavy-duty work. Most versatile fastening tool available!

SAVE TIME, CUT COSTS with this modern construction tool. Clip coupon for free booklet that shows how and where to use the Stud Driver.



Remington

DUPONT

STUD DRIVER

Industrial Sales Division, Dept. CME-11
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____



Onan Model 5DRP mounted on trailer with extension lighting standard.

Cut lighting costs with

Onan portable air-cooled Diesel Electric Plants

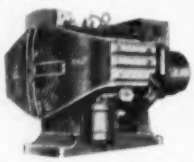
Make substantial savings on any job where extensive night-lighting is necessary by using Onan Diesel-driven electric plants. Diesel fuel has a big edge in economy and it's readily available on job sites. Onan Diesel plants are built for rugged service, with extra-large bearing surfaces, Stellite exhaust valve seats and other long life features. Engine and generator are direct-connected . . . no belts or couplings. Air-cooling eliminates trouble from freezing or leaking coolants. Compact and light weight. Put an Onan Diesel Plant on your next job and check the savings.

Diesel Plants—3,000 and 5,000 watts.
Gasoline Plants—500 to 75,000 watts.

Write for folder



Series 3DSP, 3,000 watts, single-cylinder.

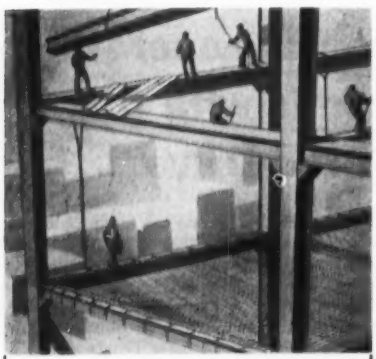


Series 5DRP, 5,000 watts, two-cylinder, opposed.

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

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for safety in construction

for:

- BUILDING
- BRIDGE CONSTRUCTION TOWER
- TANK ERECTION

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179 North 10th St., Brooklyn 11, N. Y.

WRIGHT SAFEWAYS

Your Best Buy for Rigging and Maintenance Work



12 Sizes
½-ton to 50 tons

Bulletin 412A gives complete details on the many outstanding features that make Wright Safeways your best buy for long, trouble-free life. Write York, Pa. for your copy.



Some Safeway Features

Load Chain is finest alloy, every foot proof-tested . . . heat treated for hard wear-resistant working surface . . . ductile to withstand shock loads . . . "wick" lubricated . . . anti-rust zinc coat.

Load and Idler Sheaves rotate on life-lubricated, antifriction bearings . . . minimum of 5 pockets in Big Sheaves for efficiency and long life.

Gears, Pinions, Drive Spindle (also top and bottom Hooks) are nickel-chrome-molybdenum alloy steel mounted on heavy-duty, antifriction bearings. *Gear Train* is enclosed in oil-tight chamber.

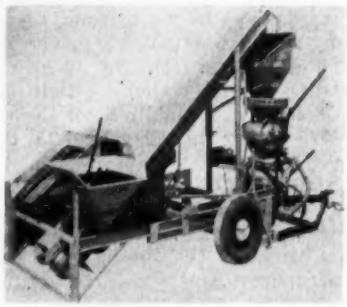
Load Brake is Weston type, silent, dependable.

Steel Housing fully protects vulnerable parts.

ACCO

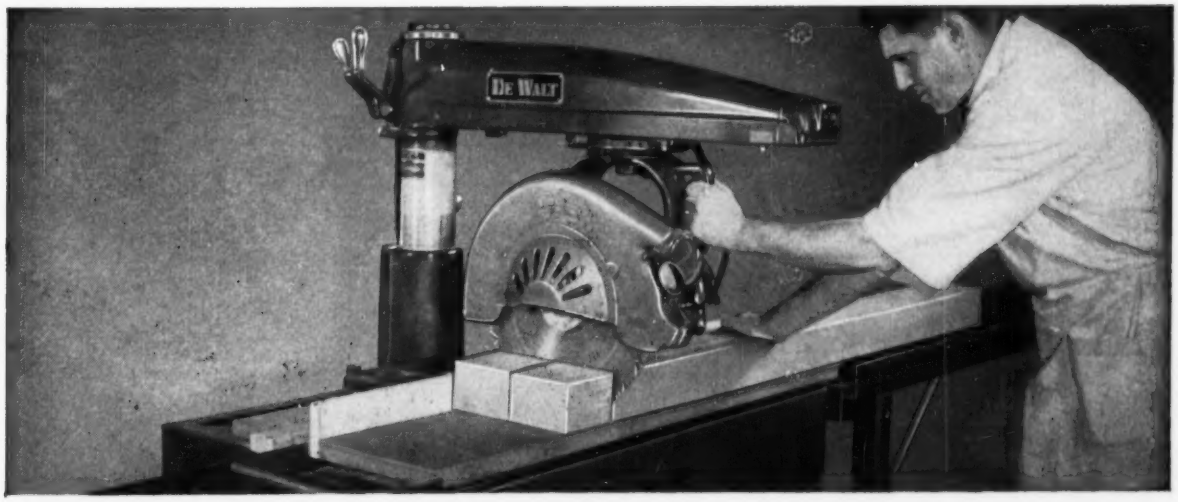
Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

or motor-driven models removable steel drive gears are supplied. For maximum safety, all gears are fully shrouded and rail sweeps and large maple bumpers are provided as standard equipment.—**Becker Crane and Conveyor Co., 4900 Ridge Rd., Cleveland 9, O.**



GUNITE ELEVATORS — Two new mix-elevators for use with concrete gunning equipment have been introduced by the Air Placement Equipment Co. The two new units, the models 600 and 610, are basically the same except that the model 610 incorporates a built-in aggregate dryer. Both models can be operated at any rate up to 12 yph. The 610 is shown working with Airplaco's model 1600-H Nucretor concrete gun. The built-in aggregate dryer in the model 610 makes it possible to reduce the moisture content of sand from 2 to 5%. This means that the gunning operation can be continued in wet weather or when the moisture content of the sand is too high. The drying apparatus includes a 750,000-btu propane or LPG burner, with duct work directing hot air blasts into the sand bin and along the length of the mixing trough. The complete concrete gunning rig, including a Nucretor, weighs about 3,600 lb. It is balanced so that it can be towed with a ¾ or 1-ton pick-up truck, according to the manufacturers. — **Air Placement Equipment Co., 1009 W. 24th St., Kansas City, Mo.**

CAT HEATERS—Two new types of hot water heaters are available for three models of cab-equipped Caterpillar crawler tractors. The heaters are recirculating and fresh air types, and they are designed for Cat D9, D8, and D4 tractors. The recirculating type reheats the air supply



Save money on all your cutting operations

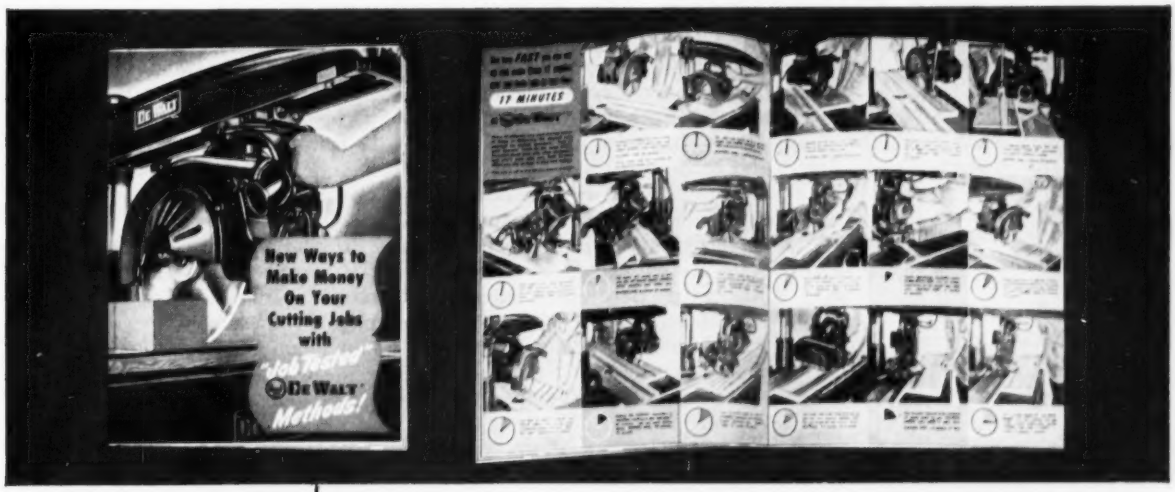
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- How to give your operators unmatched job safety!
- How to make 17 different, popular saw and dado cuts... in less than 17 minutes!
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- How to upgrade quality of work—*automatically!*
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See why the AMF De Walt® is used in hundreds of thousands of cutting operations throughout industry... why an AMF De Walt for *your* cutting jobs is one of the smartest investments you can make.



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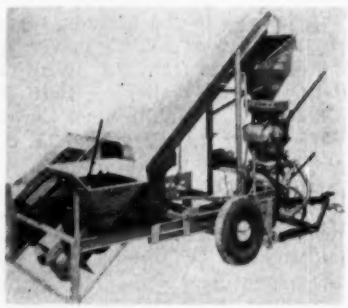
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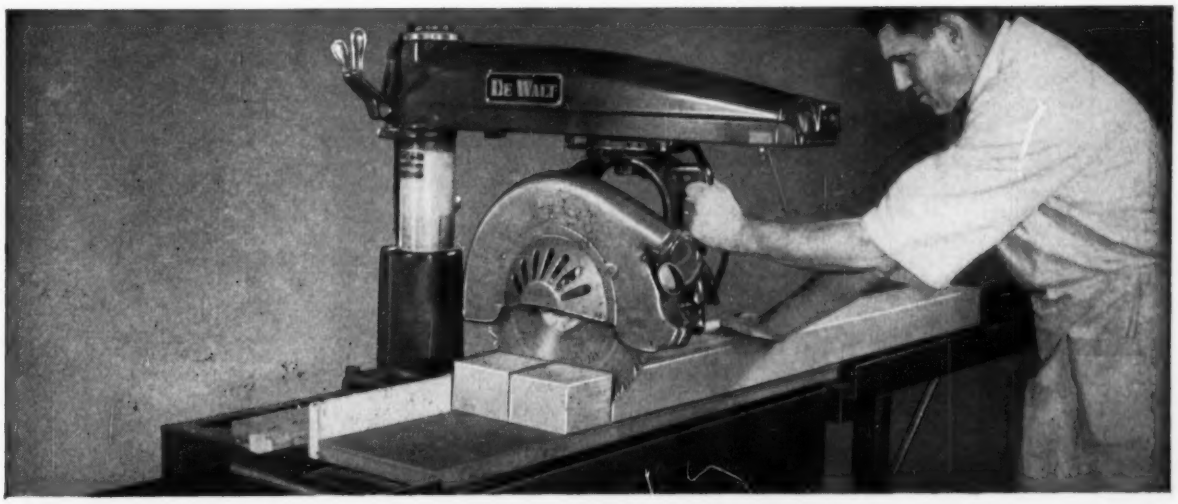
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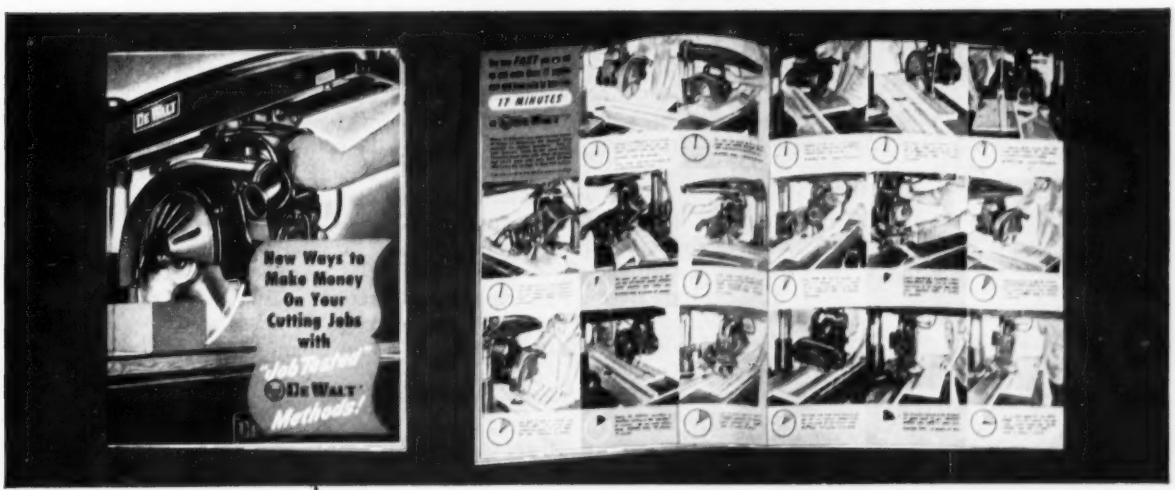
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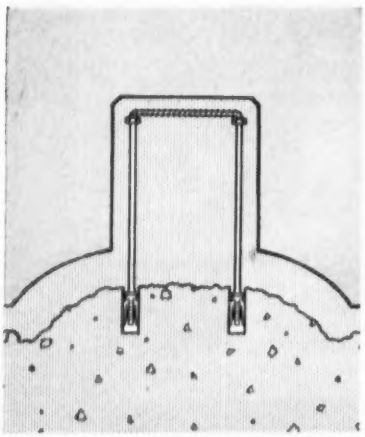
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Anchor Bolts Reinforce Medial Barrier On Highway in Pennsylvania



In this installation, Bethlehem Anchor Bolts are inserted in holes drilled into the existing roadway. Leaves of expansion shells grip sides of holes firmly, to prevent movement.

Embedded in this concrete medial barrier on a bridge crossing are some 800 Bethlehem Anchor Bolts. The ¾-in. bolts are 24 in. long, and have hexagonal heads. They are used with Bethlehem "C" expansion shells, and are installed vertically, about 13 in. apart. The bolts are connected by means of fabricated Bethlehem Reinforcing Bars.

Bethlehem Anchor Bolts are ideal for reinforcing medial barriers, as well as for helping to prevent rock slides along highways, because of their tremendous holding power in concrete and rock.

In addition to the ¾-in. headed bolt, which is used with an expansion shell, Bethlehem also makes a 1-in. slotted bolt, used with a steel wedge. Either type is installed in drilled holes, and can be used with anchor plates or angle washers, and if desired, steel ties.

If you would like to look into the use of anchor bolts at highway danger points, we'll be pleased to have a representative call at your convenience. All you need do is get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

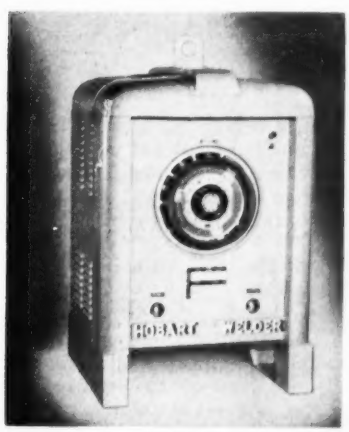
BETHLEHEM STEEL

BETHLEHEM STEEL

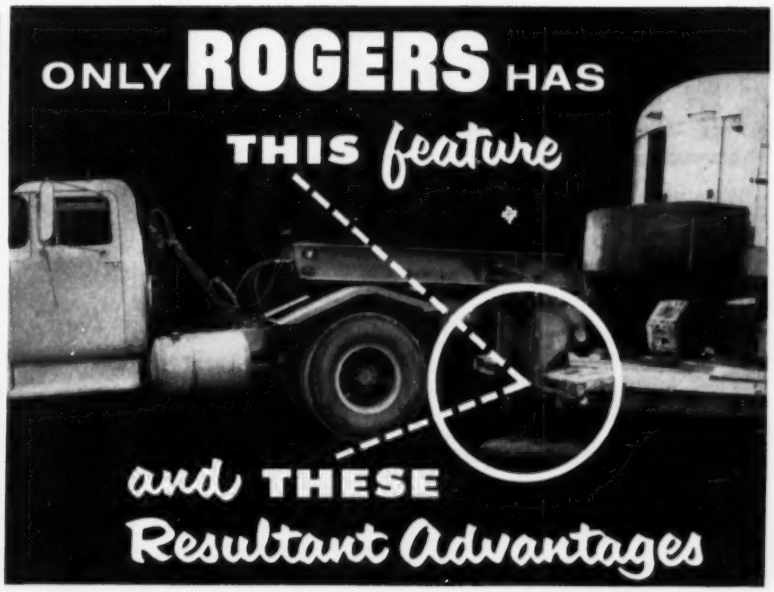
within the cab, while the fresh air heating system uses outside air. The new heaters replace the recirculating-type heaters formerly available. Both are available either factory-installed on new equipment or for installation on machines already in the field. —**Caterpillar Tractor Co., Peoria, Ill.**



LOOSENS SAFELY—Snap-on's new impact wrench has a cupped striking surface so that a bull-nosed driver, inserted in an air powered rivet buster, can impact the wrench from various angles to tighten nuts or bolts. The tool is said to overcome close-quarter limitations, to eliminate the hazard of striking wrenches with a sledge hammer, and to save time. The double hexagon, broached wrench openings have extra thick walls to withstand repeated blows. The wrench is offered in 27 sizes, from 1 7/16 to 4 5/8 in.— **Snap-on Tools Corp., 8028 28th Ave., Kenosha, Wis.**



NEW ARC WELDER — A new triple-rated AC transformer-type arc welder for operation on single-phase, 60-cycle, 230-v input has been developed by Hobart Brothers. Output of the new welder at 30 v is 295 amps on 20% duty cycle, 250 amps on



This exclusive feature makes the Rogers HYDRAU-LIFT *more than* a detachable gooseneck trailer — one, in fact, that performs operations no other trailer can handle.

IT *detaches, loads* and *reloads* in as little as 3 minutes.

IT *loads from the front,* making turning on deck unnecessary.

IT can travel *with deck lowered or raised* to pass under or over obstructions thus avoiding detouring, moving ahead and reloading.

IT can *discharge overhanging loads* quickly and simply.

IT *raises tractor or trailer* wheels, while attached, to easily service tires or attach chains.

ITS *flat, unobstructed gooseneck* provides a convenient place on which to carry dippers, bulldozer blades, etc.

IT *requires no winch,* saving up to $900 in cost and 1000 pounds in overall weight.

PATENT NO. 2590210

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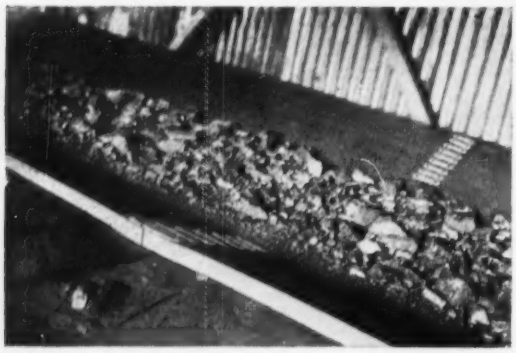
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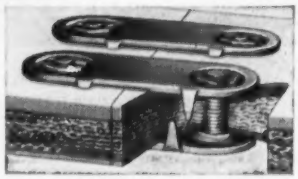
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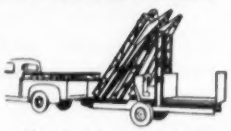
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30% duty cycle and 200 amps on 50% duty cycle. Controls provide five main steps of coarse adjustment for all conventional AC welding, as well as for certain inert gas welding applications. A rheostat in the center of the five-range wheel operates in each step to provide fine adjustment of arc so that an infinite number of welding settings is available. The welder is available with or without capacitors for power factor correction. The stationary unit is 32⅝ in. high, 21 in wide, 121 in. deep, and it weighs 245 lb. A portable mounting is available. **—Hobart Bros. Co., Troy, O.**



QUICK HEAT — Master's new B250 portable heater, which delivers up to 250,000 btu's per hr, will run for 16 hr on a single tank of kerosene or inexpensive fuel oil. For safe, automatic operation, the heater has a built-in thermostat. To get quick heat, the operator just plugs it into any regular 115-v AC outlet, sets the thermostat, and flips the switch. According to the manufacturer, the new heater does not need a vent because it burns fuel so completely, and it will not soil plastered or painted surfaces.— **Master Vibrator Co., 1752 Stanley Ave., Dayton 1, O.**

NEW PISTON DESIGN — The Diesel Div. of Harnischfeger Corp. has introduced a new connecting rod and piston design— said to be the first of its type— for its line of two-cycle P&H diesel engines. Called a "mushroom" rod and piston, the design utilizes a half-ball and socket coupling in place of the wrist pin arrangement. Bearing area is increased up to 2½ times over that offered by pin-type construction, according to the manufacturer, and this provides smoother operation and longer bearing life. The

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"Running time" for complete disassembly, assembly of this complete track — 115 minutes!



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125 tons pressure eases pin, bushing from sidelink



Forcing head retracts — sidelink separated



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Pin, bushing aligned with sidelink — ready for pressing



Sidelink squeezed onto pin, bushing with full 125 tons force

NEW OTC TRACKMASTER TRACK PRESS

- *pushes both pin and bushing at the same time*
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new ease — leave grousers on (2 bolts removed) or off — no adapter handling during disassembly or assembly.

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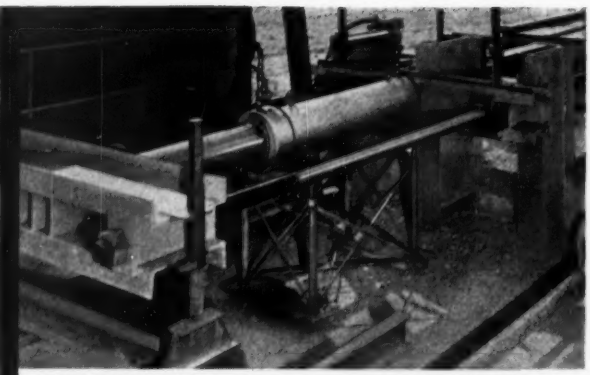
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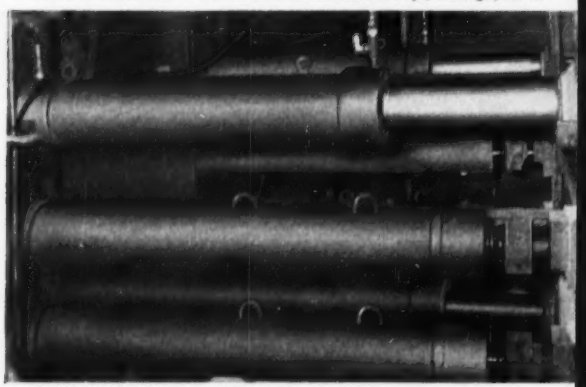
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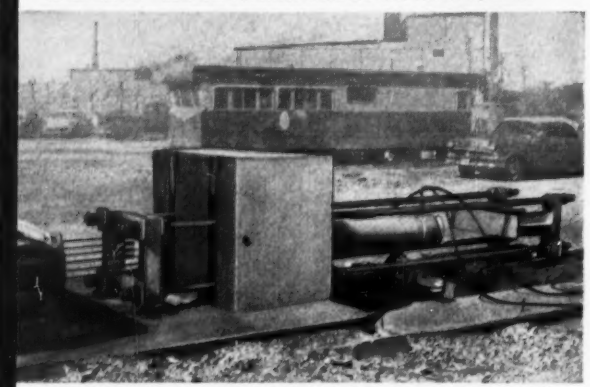
NORTH CAROLINA—North Carolina Products Corp., Raleigh, N. C.



CALIFORNIA—Rockwin Prestress Concrete Co., Norwalk, Calif.



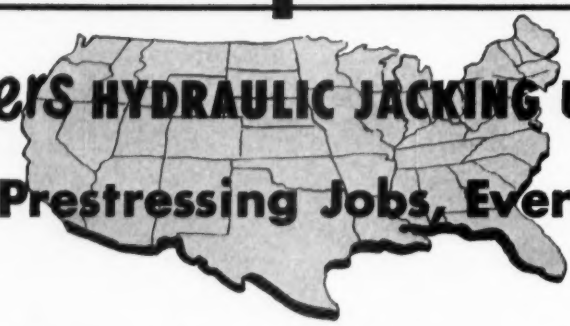
PENNSYLVANIA—Schuylkill Products, Inc., Cressona, Pa.



NEW YORK—Frontier Dolomite Concrete Products, Lockport, N. Y.

Rodgers HYDRAULIC JACKING UNITS

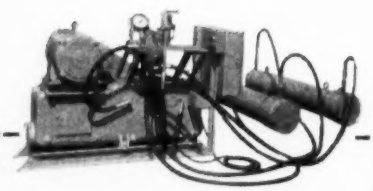
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Regardless of size or type of bed design—whether the jacking carriage is of rods with locking nuts or guided structural steel abutments with locking screws—Rodgers Jacks assure smooth, positive action. Accurate control of pump and jacks provides uniform pretensioning and detensioning to conform with exacting state and municipal specifications.

Prestressing units with any number of jacks are available with hand operated or power driven hydraulic pumps in capacities from 50 to 600 tons. Double-acting jacks are offered with ram travels of 30 or 48 inches.



For complete information on Prestressing Jacks and Pumps write for Rodgers Catalog 332 A

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Rodgers Hydraulic Inc.

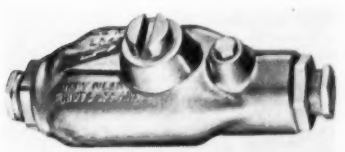
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EXPORT DIVISION
205 WEST WACKER DRIVE
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hollow mushroom carries an oil supply from the crankcase to the network of oil grooves in the top side of the rod bearing. Both oil flow and oil pressure to the bearing are increased. The piston itself rotates freely in the cylinder, maintaining roundness of both the piston and the cylinder wall. Carbon accumulation is said to be reduced, piston and ring life lengthened, and engine oil control improved. Both rod and piston are part of the P&H Utilized Power Assembly—a unit that includes a complete head, liner and water jackets, and which can be replaced in a P&H diesel in less than an hour. — **Harnischfeger Corp., Crystal Lake, Ill.**



WHEEL TRACTOR RIPPER—A new ripper for use with rubber-tired tractor loaders in the 1 to 2½-yd class has been introduced by Ransome Corp. Called the model R-25-75, it incorporates Ransome's one-man rack and pinion depth adjustment design. The ripper has a 3x6-in shank with a replaceable 18-lb cast manganese tooth. It is easily mounted on the bucket of wheel loaders. — **The Ransome Corp., 2729 Hunting Park Ave., Philadelphia 29, Pa.**



SAFETY OILER—A new automatic line oiler, which prevents air tool damage by shutting off the air supply when the oil is used up, is now being manufactured by the LeRoi Div. of Westinghouse Air Brake Co. Called the L0380, the oiler is light in weight, easily adjustable, and re-

Veteran operator Delbert Corman "at ease" while his Cleveland is digging gas and water lines for a Lexington, Ky. subdivision



Cleveland's exclusive multi-speed transmission provides right power/speed ratio for every job

"For easy handling and dependable digging even under the toughest trenching conditions give me a Cleveland every time," says long-time heavy equipment operator Delbert Corman of Aldridge & Poage Co., Lexington, Ky., owners of 3 Clevelands. Thousands of trench operators and owners throughout the world agree with him. Credit for this world-wide preference for Clevelands is due to the perfectly balanced combination of practical performance-proved features found in every Cleveland. Practically every modern trencher feature originated with Cleveland. But no single trencher feature ever developed is the equal of Cleveland's exclusive multi-speed crawler transmission.

For *each* of 4 digging wheel speeds this transmission provides 12 individual crawler speeds forward and 12 reverse, all closely and evenly graduated. The 48 forward speeds give the operator a choice of over 30 *practical* digging speeds—over 30 usable *combinations* of digging wheel and crawler speeds, providing the *right* combination of power and speed for digging every soil, under every digging condition. The following table of non-slipping, power-saving digging speeds for the Cleveland 95 is typical.

Cleveland's exclusive multi-speed transmission has no equal

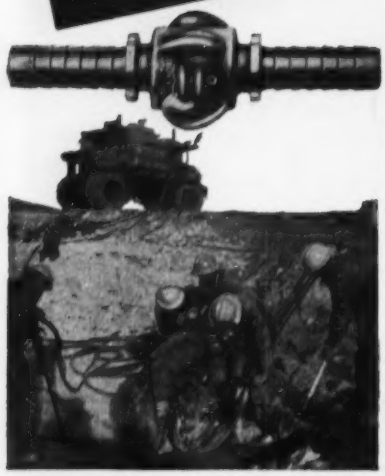
For each of 4 wheel speeds	there are 12 individual crawler speeds											
With Main Transmission (and Digging Wheel) in	SPEEDS (in Feet per Minute) — Available in Either Direction (Bold Face Indicates Most Commonly Used Digging Speeds)											
First Speed	.5	.7	1.1	1.5	2	2.8	3.4	4.7	5.9	12.6	22.5	38
Second Speed	1	1.4	2.2	2.9	3.9	5.3	6.6	9	11.5	23.8	43	73
Third Speed	2	2.8	4.3	5.8	7.8	10.6	13.3	17.9	22.8	47	86	146
High Speed (Ordinarily used when digging)	3.3	4.6	7.1	9.5	12.8	17.5	21.7	29.6	38	78	143	240
Reverse (not used when digging)	.4	.6	.9	1.2	1.6	2.2	2.7	3.7	4.8	9.9	18	30

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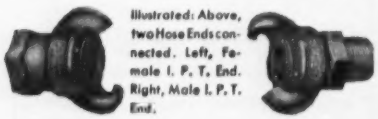
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EQUIPMENT NEWS . . . continued

fillable when in use. The oil pick-up feeds oil the instant drilling starts and the moment the oil supply is exhausted the air supply to the tool is shut off. The 1-pt capacity oiler, which is made of aluminum, weighs only 9 lb. Less than 1 ft in length, it is easy to incorporate into air lines or to mount on compressors. Its top capacity is 300 cfm. Differential pressures are used to operate the oiler. Air is routed through it to create a pressure on the inside of an oil resistant bellows. This forces a regulated amount of oil through a port so that it is injected into the air stream at the outlet end of the oiler. When the oil chamber is empty, the bellows activates a shut-off plunger that cuts off the air supply.—**LeRoi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.**



BUILT-IN CHUTE—The need for special concrete chutes or job-fabricated equipment is eliminated by the use of Universal's Uni-Form panel and adjustable pilaster form. Universal engineers have devised a simple method of providing a combination pouring pocket and concrete chute that uses only standard hardware. The Uni-Form panel quickly becomes a chute when tilted into position and secured with bolts to the adjustable pilaster form. After a pour is made, bolts are removed and the form is simply pushed back into place. — **Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago 51, Ill.**

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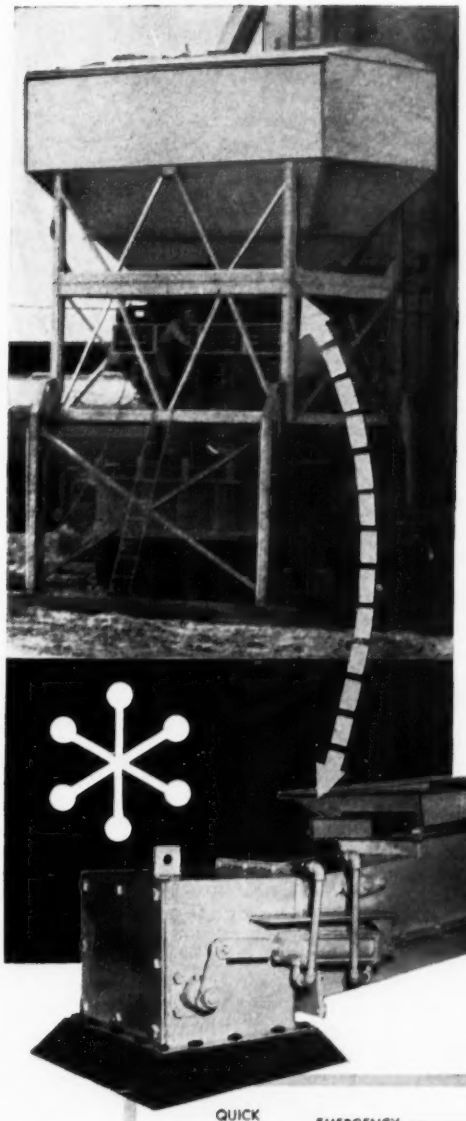
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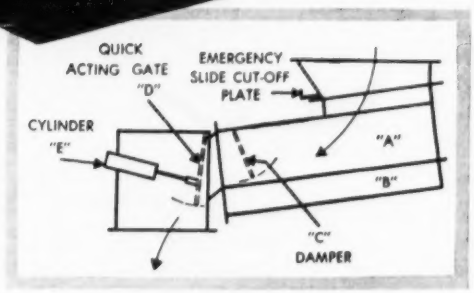
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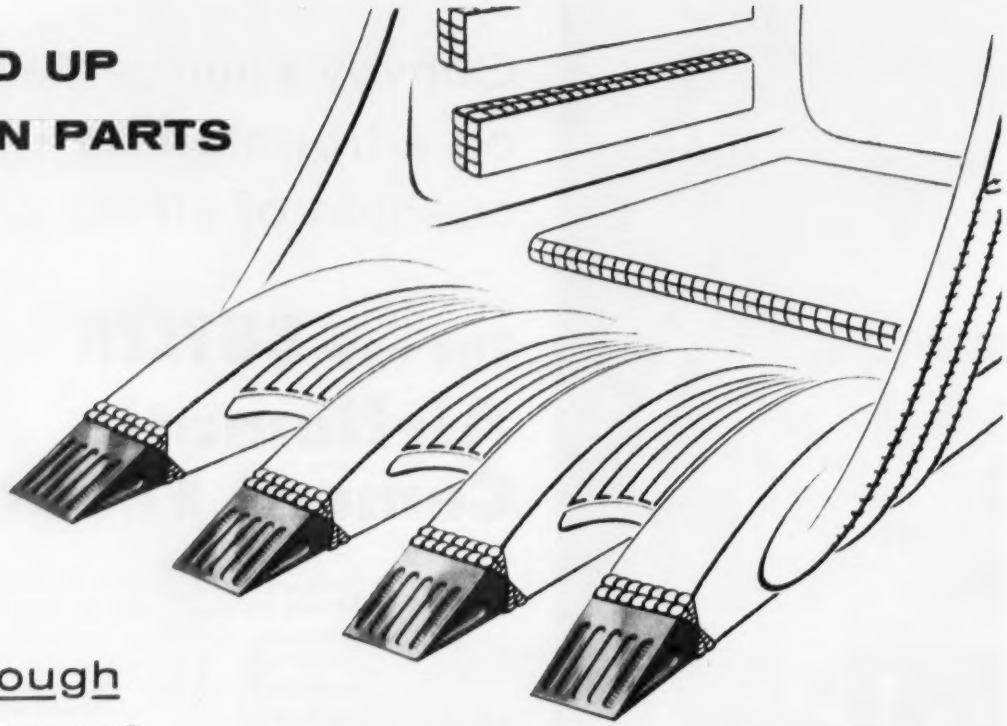
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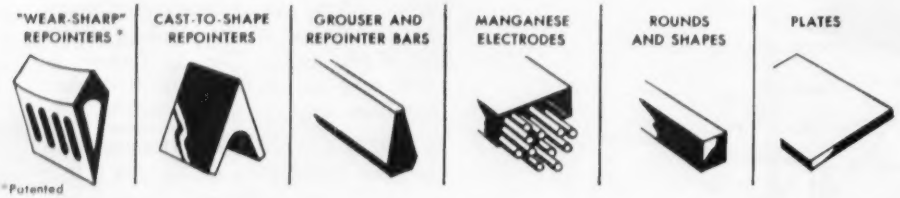
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New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

STEEL BUILDINGS—Frameless steel buildings that can be erected quickly and cheaply are described in a new 6-p Armco folder. These buildings come in a wide range of sizes and can be put up by a contractor or by Armco crews.—**Booklet SX-13857, Armco Product Information Service, Middletown, Ohio.**

NEW BACKHOE—A 16-p catalog describes Hyster's new model D4 hydraulic backhoe. The rig is designed to fit the Caterpillar D4 tractor and the 955 Traxcavators.—**Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore.**

FLEXIBLE COUPLINGS—Book 2775 describes the company's complete line of improved geared flexible couplings. The 12-p booklet gives applications and selection data for couplings with maximum bores ranging up to 7-in.—**Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.**

CATERPILLAR TOOLS—A 16-p bulletin, No. CT57, describes a range of hydraulic and manual service tools designed specifically for Caterpillar equipment. Detailed instructions on use of the equipment are included.—**Owatonna Tool Co., 380 Cedar St., Owatonna, Minn.**

WELDING TEXT—The second edition of "New Lessons in Arc Welding" is now available. The book has been completely rewritten and reorganized and includes information on the latest techniques. The 320-p book covers welding techniques, use of machines, and reference material on electrodes. Price is $1 in U. S. A., $1.50 elsewhere.—**The Lincoln Electric Co., Cleveland, Ohio.**

GRADALL MANUAL—A 60-p pocket-sized reference manual contains drawings and photographs of all Gradall equipment and attachments. Included are descriptions of a number of job



Ramset speeds erection of two-story "piggy-back"

Thanks to curtain-wall construction and RAMSET® fastening, there was no need to reinforce the understructure of this new Denver office building. Using RAMSET, two new floors went up in three weeks *without disturbing the tenants in the lower eight floors!*

The speed, quietness and portability of RAMSET helped to make this "piggy-back" operation a success.

RAMSET operators are able to move fast because they have no power lines or bulky equipment to slow them down. One-hand operation makes for faster, safer work. Fasteners and charges are conveniently carried in a pocket. There is no time wasted drilling. Holding power exceeds old-style fastening methods.

Call your RAMSET dealer (listed under "Tools" in your phone book). He's an expert on fastening to steel and concrete.

T. J. Moore, architect; K. C. Construction Supply Co., curtain wall contractor; Neal Electric Co., electrical contractor; Bell Plumbing & Heating Co., plumbing contractor.

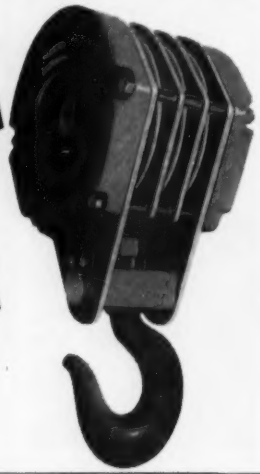
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WINCHESTER-WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION
12103-K BEREA ROAD • CLEVELAND 11, OHIO

extra heavy
SPACE-SAVER
crane hook
BLOCKS

NOW . . . you really can work efficiently in *close* quarters. These specially designed MADESCO blocks carry loads from 5 to 50 tons, combine performance features developed through 30 years of specialized engineering for the construction field.

Available with plain or anti-friction bearings in hook, lubricated bronze or anti-friction bearings in sheaves, cast iron or steel side weights. Sheave diameters 14", 16", 18", 20", 24". For safe and speedy hoisting, nobody else offers you so wide a choice of blocks for *every* job. Consult your supplier or write to our engineering department.

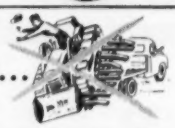
MADESCO
BLOCKS



HAE-MA 363-457

MADESCO TACKLE BLOCK CO.
MAIN OFFICE & PLANT, EASTON, PA.

Don't take chances with make-shift rigs...



load fast! load safely!
with MILLER *Tilt-Top*



Model "B" 10 ton $1250.00* F.O.B. Milwaukee
Complete with platform and tires
Any optional equipment extra
*Plus 10% Federal Tax

Make-shift, "home-welded" truck platforms, or "jerry-built" trailer rigs may seem like a cheap way to haul . . . but they can be plenty expensive when something gives way under several thousand pounds of equipment. *Just one* slip . . . could cost you much more than a ruggedly built MILLER Tilt-Top. On any model you choose — its big, broad platform merges with the ground for the fastest, safest, drive-on loading you've ever tried. Available in a variety of single and tandem axle models from 3 to 13 ton capacities . . . Miller Tilt-Tops also offer a wide range of platform sizes . . . all decked with tough, traction sure, 2" oak. Don't take chances loading expensive equipment or risking serious personal injury on make-shift rigs . . . be fast, be *safe* with a MILLER Tilt-Top!

✓ built best
✓ priced best

See your MILLER distributor or write for FREE literature to:

Miller®
Tilt-Top Trailer Inc.
457 S. 92nd St., Milwaukee 14, Wis.

NEW PUBLICATIONS . . .
continued

applications and the production figures obtained on these jobs.—**Gradall Division, The Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.**

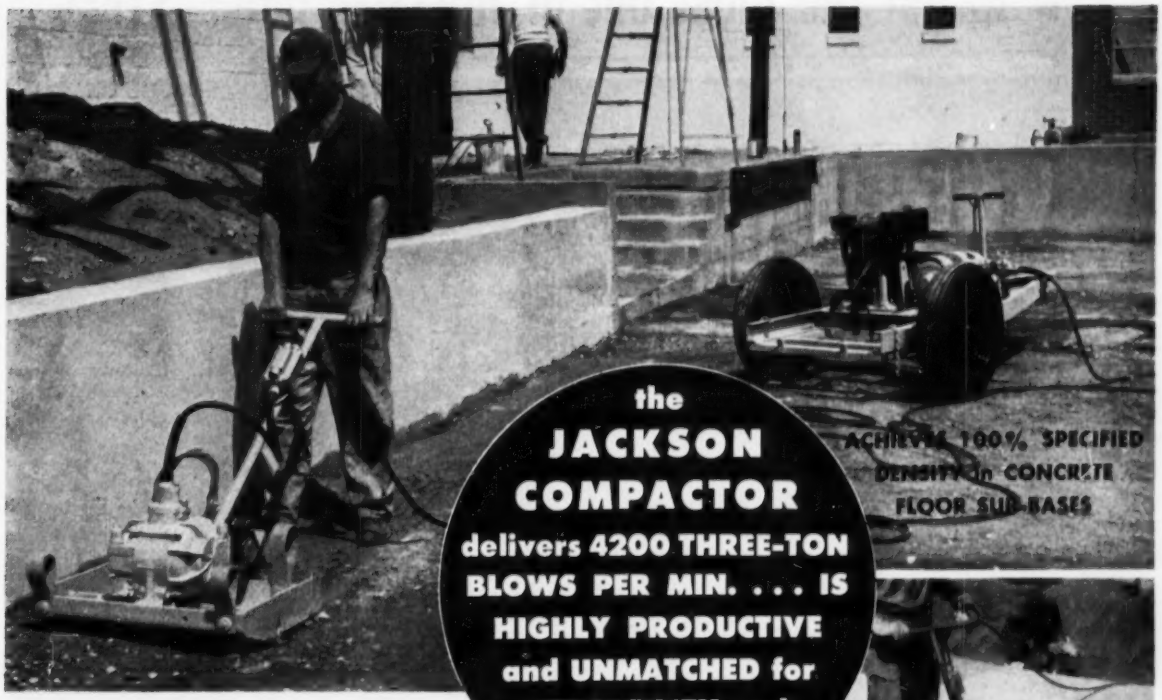
RED CEDAR DATA—"Western Red Cedar Lumber Grades and Uses" is a 36-p booklet illustrating and describing a wide range of red cedar specifications, and applications. It is similar to the previously published books on Douglas fir and West Coast hemlock.—**West Coast Lumbermen's Association, 1410 S. W. Morrison, Portland 5, Ore.**

LADDERS—A 19-p catalong describes a complete line of ladders and ladder products along with some tips on safe use of ladders. —**Louisville Ladder Co., 1101 West Oak St., Louisville, Ky.**

GUNITE DATA—A booklet describing a large number of applications and giving detailed specifications has been issued by the Gunite Association. The 42-p publication summarizes new developments and clears up some confusion that has arisen over Gunite specifications. — **Gunite Contractors Association, 714 West Olympic Blvd., Los Angeles 15, Calif.**

ELECTRICAL HANDBOOK—Delco-Remy has released a supplement to the DR-324 Operation and Maintenance Handbook. It contains new service bulletins released after the DR-324 was published. For users of older units the handbook is still available at $1.50 per copy. The supplement costs $1.00 — **Technical Editor, Delco-Remy Division, General Motors Corp., Anderson, Ind.**

IH TRUCKS—The advantages of International Harvester's two off-highway trucks, the models 95 and 65 Payhaulers, are described and illustrated in a new 16-p catalog. The catalog, called "Cycle-Speeding International Payhaulers," is divided into four sections that are concerned with spotting, loading, hauling, and dumping operations. Close-ups of component parts that apply to each operation are illustrated. Features of the Payhaulers that are shown include the offset cab design, that



the JACKSON COMPACTOR delivers 4200 THREE-TON BLOWS PER MIN. . . . IS HIGHLY PRODUCTIVE and UNMATCHED for VERSATILITY and CONVENIENCE!

The JACKSON VIBRATORY COMPACTOR, together with a JACKSON auto-trailer-generator unit equipped to quickly pick up and lower the Compactor, is the handiest, most efficient and versatile outfit imaginable for compacting both granular soils and blacktop in an almost unlimited variety of applications. In granular soils 100% specified density is readily achieved in 6" to 8" layers at the rate of 600 sq. yds. per hour. 5" layers of bituminous mixes are also compacted close to maximum density at the same rate of production. And when a twin hookup is used, such as shown below, one man can easily double this production since the machines are self-propelling and need only be guided by the operator. (THE JACKSON IS THE ONLY COMPACTOR WHICH CAN BE USED IN TWIN HOOKUP.) Quickly interchangeable bases of 12" to 26" widths is another feature that adds to the great versatility of the JACKSON COMPACTOR. For consolidating sub-bases of concrete floors, bridge approaches, compacting in trenches, close to abutments, pavement widening sub-bases, patching and widening bituminous pavement and paving blacktop walks and drives this is the greatest money-making outfit you will discover anywhere. For rent or sale at your Jackson Distributor. His name and literature gladly sent on request. Write, NOW!

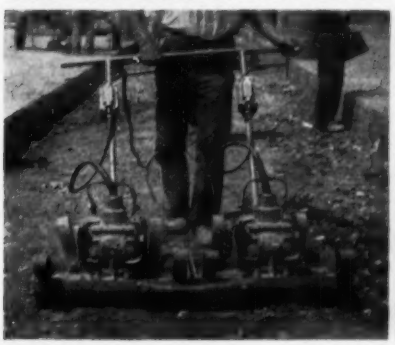


BACKFILL▲▼TRENCHES



JACKSON VIBRATORS INC. LUDINGTON, MICHIGAN

TWIN UNIT DOUBLES PRODUCTION



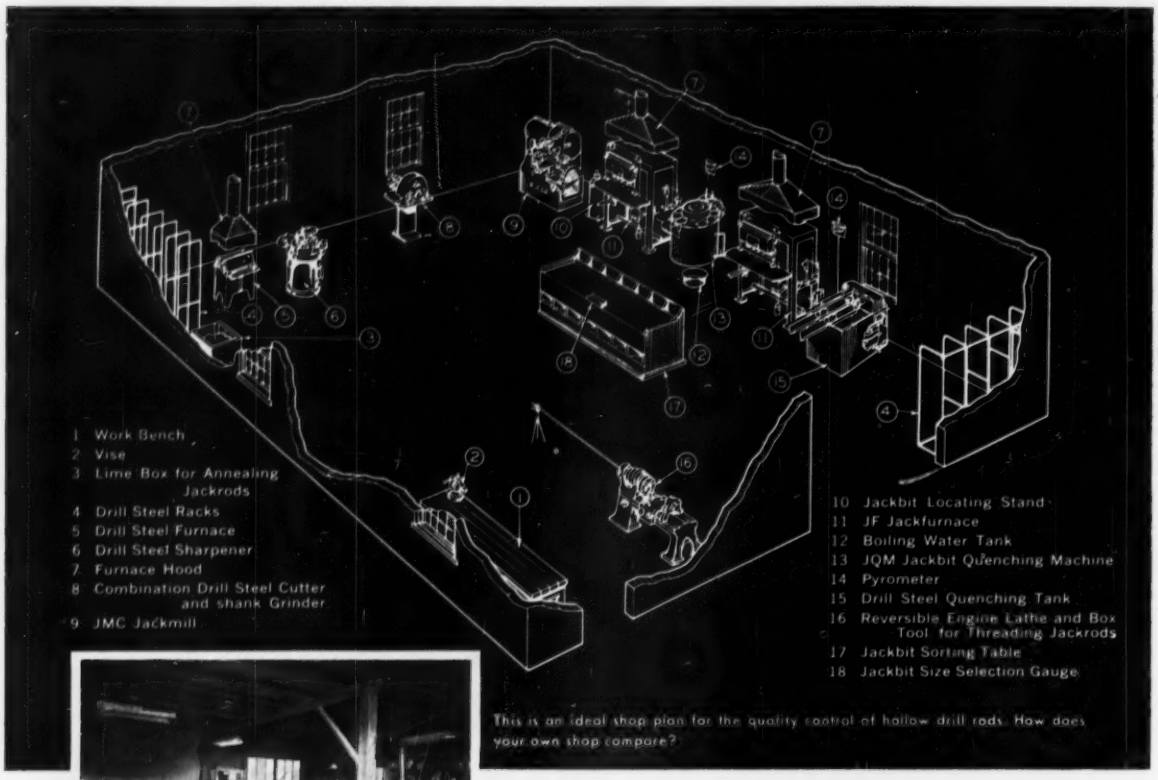
PAVEMENT PATCHING



PAVING DRIVES and WALKS



how to get the most out of HOLLOW DRILL STEEL



This is an ideal shop plan for the quality control of hollow drill rods. How does your own shop compare?



Typical on the job arrangement.

To bring you the best drill rods possible, manufacturers spend many thousands of dollars each year in development and testing. Crucible, for example, put more than half a hundred different alloys through their paces before CA DOUBLE DIAMOND and 4E Alloy Hollow Drill Rods proved the answer to lower cost drilling.

But to get the most out of modern drill steels, you've got to *maintain* their fine quality *after they reach your shop.*

The Answer is Quality Control

Unintentional abuse of drill steel by improper forging, machining, heat treating and other shop operations, produces a rod that is bound to give poor performance.

That's why full time supervision on operations such as these can mean longer drill life on the job:

1. Check heat treating process. Overlap heats for proper time.
2. Check furnace and forging temperatures.
3. Check annealing process to insure correct hardness.
4. Check Rockwell hardness of shanks and thread ends.
5. Check fit of bits on newly threaded rods.
6. Check location and severity of metallurgical notch.
7. Examine all rods returned from the job and determine reason for failure.

Shop control of this type actually saves money by eliminating many rod failures on the job. Personnel will be enthusiastic in reporting improved rod performance, and you'll be getting lower cost per foot of hole drilled.

Your nearby Crucible representative will be glad to supply helpful information on other phases of drill rod care and operation — or arrange for *prompt* deliveries of hollow drill rods in the sizes, grades, and types you need. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

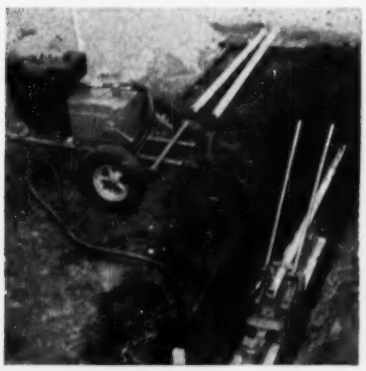


FAST, LOW-COST WAY TO INSTALL PIPE . . .

push it under streets, roads, tracks, lawns with a timesaving

GREENLEE HYDRAULIC PUSHER

Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.



Two feet per minute average pushing time

GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

GREENLEE

GREENLEE TOOL CO.

2191 Columbia Avenue • Rockford, Illinois

NEW PUBLICATIONS . .
continued

assures the operator of unobstructed visibility to the rear; the power steering system that facilitates quick spotting; and the rugged main frame and the semi-elliptic, free-floating springs that aid shock absorbtion..—**Construction Equipment Div., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

OPEN-WEB JOISTS — Ceco Shortspan open-web steel joints, which offer an economical, lightweight system of floor and roof construction, are described in a new 32-p booklet. The brochure provides tables of available dimensions, properties, and allowable loading characteristcs. Complete specifications as well as recommendations for handling and erection are included.—**Ceco Steel Products, Corp., 5601 W. 26th St., Chicago 50, Ill.**

COPY MACHINES—A new bulletin published by Peerless Photo Products, Inc., describes the advantages of each of the four principal types of office photocopy machines in use today. Called "Office Copy Machines and How to Choose the One to Suit Your Needs," the booklet points out the relative merits of each type with respect to print quality, economy of operation, and the permanence of copies.—**Peerless Photo Products, Inc., Shoreham, L.I., N.Y.**

UNIVERSAL LINE—A new condensed catalog covering its entire product line has been offered by Universal Engineering Corp. The 20-p catalog illustrates and gives specifications on crushing, screening, washing, loading, feeding and conveying equipment.—**Universal Engineering Corp., 625 C Ave., Cedar Rapids, Iowa.**

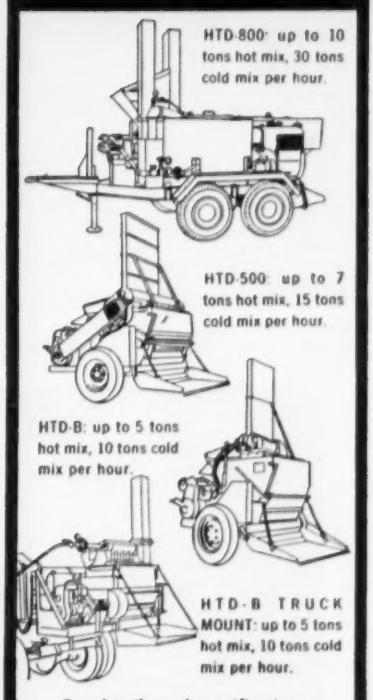
25-TON CRANE—A new 20-p illustrated catalog featuring their new 1-yd, 25-ton capacity crawler crane is offered by Bay City Shovels, Inc. The booklet contains facts and photographs showing the design features of the convertible shovel, crane, hoe, clamshell, and dragline. Typical illustrations include cut-a-way views of lower base assemblies, speed reducing units, and tandem drums.—**Bay City Shovels, Inc., Bay City, Mich.**



For Low Cost Paving or Patching



McConnaughay
ASPHALT MIXERS

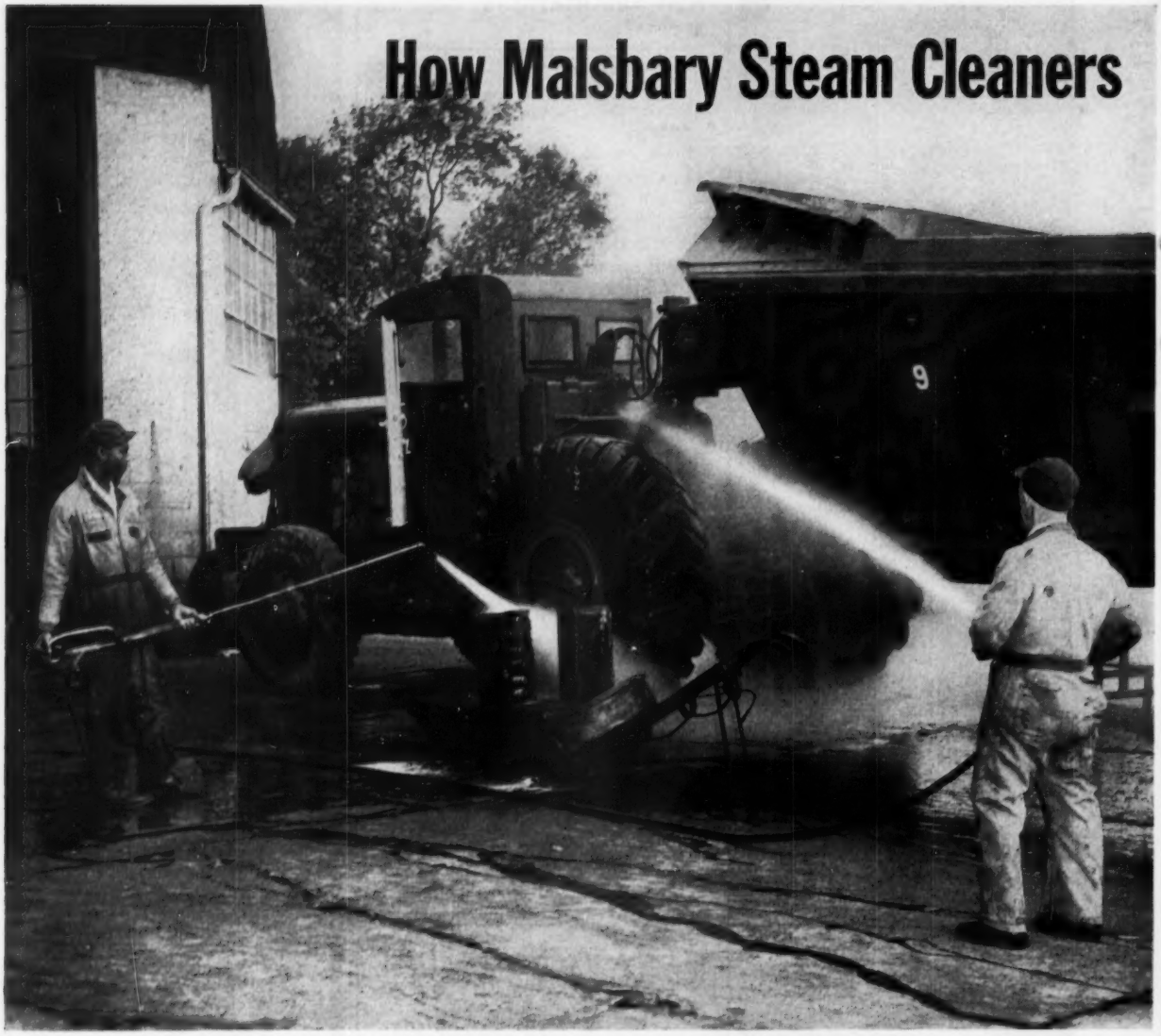


For details and specifications, write, wire or 'phone . .

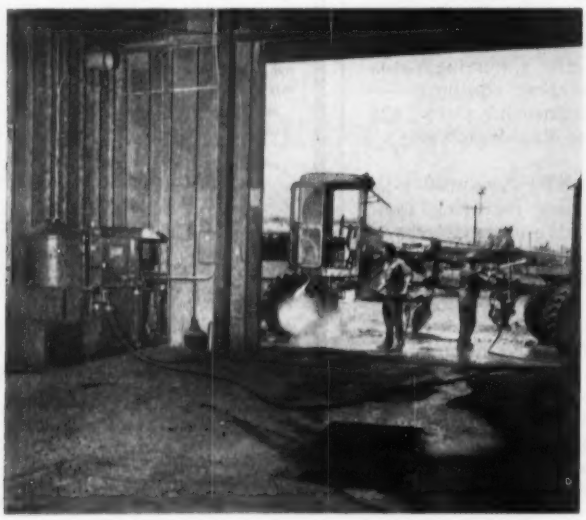
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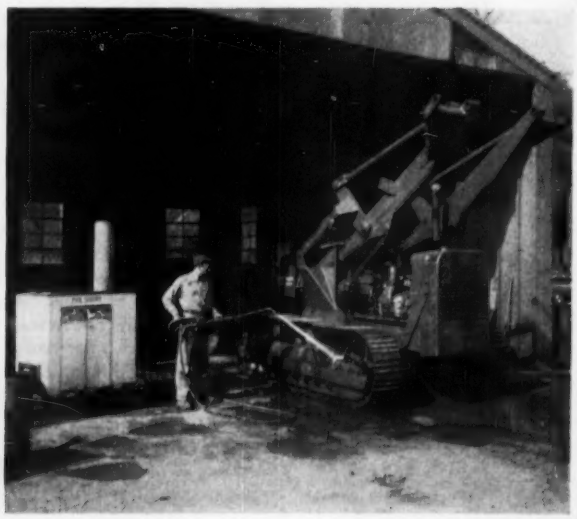
National distributors: Asphalt Equipment Co., Inc., 3314 Cherry Lane, Fort Wayne, Indiana

How Malsbary Steam Cleaners



"Really Pays for Itself," says Supt. Ira Davidson, Savin Construction, Connecticut, of Malsbary 300 HPC shown simultaneously steam cleaning engine block and cold rinsing big Euclid. Like so many other contractors, Savin finds clean rigs easier to work on.





Speed Repairs on Construction Rigs



Malsbary steam cleaners offer savings opportunities matched by few other maintenance tools, in terms of manpower and downtime required for repairs.

One man with a Malsbary steam gun will get more equipment ready for repair or overhaul in an hour than the same man with brush and bucket in 7 or 8 hours—and he'll do a better job. The steam cleaner can effectively clean every nook and cranny—plenty of spots you can't possibly reach by hand, however many bruised knuckles you're willing to put up with! Exactly how fast, and how thoroly a steam cleaner performs for you depends upon the power of the cleaner, so . . .

For Real Savings, Use Cleaner that Matches Your Work Load

Cleaning construction rigs is much like washing your hands—the dirtier they are, the more pressure, soap, and water you need.

Chances are most of your work is on good and dirty machines, which calls for heavy-duty cleaning. Malsbary High Pressure Combination (HPC) cleaners were developed for this exact type of job. Chart below compares actual time studies on competitive demonstrations of steam vapor cleaners and Malsbary HPC Model 250. Note the very important time and dollar savings. Translate the downtime on machine being cleaned into dollars, and see how much "plus" HPC gives you.

CLEANING JOB	STEAM VAPOR CLEANER	MALSBARY HPC CLEANER
A-C HD-20 complete, ready to paint	Size: 120 gph. max. 5½ hrs. $12.30	Model 250 2¼ hrs. $7.53
3500 Manitowoc complete, inside and out	Size: 120 gph. max. 40 hrs. $98.40	Model 250 10½ hrs. $35.18
Model HH Payloader	Size: 120 gph. max. 3 hrs. $7.38	Model 250 1½ hrs. $5.03
International TD-24	Size: 180 gph. max. 6 hrs. $17.40	Model 250 2 hrs. 35 min. $9.65

Note: Costs include labor, fuel, cleaning compound, electricity, water, and hose depreciation.

Why HPC Cleans Faster and Better

Only Malsbary HPC cleaners deliver 240-480 gph. of 325° F. solution at 300-400 psi. This gives you a cleaning blast 100° hotter than any other cleaner. It's the key to the fast cleaning action that literally explodes hot solution from the gun nozzle, softening and blasting away stubborn tars, corrosive grease and dried muck that so hampers repair work.

Simultaneous 2-gun operation. Malsbary Series 300/500 HPC cleaners are the only cleaners on the market that give you simultaneous 2-gun operation—one gun cleans with boiling hot solution while a second handles high pressure cold water work.

Versatility of these cleaners is unmatched. They will do any cleaning job—and do it 4 to 10 times faster, and at ½ to ⅕th the cost! You get these cleaning actions:

1 High pressure hot solution to 300-400 p.s.i. at 325° F. to soften and blast away hard-sticking materials. **2** High pressure cold water to 300-400 p.s.i. for rapid removal of caked dirt, or for cold rinsing. **3** High pressure hot water to 300-400 p.s.i. at 200° F. to melt and remove ice and frozen mud, or to rinse equipment. **4** Low pressure wet steam (15-30 boiler hp.) to degas and clean tank interiors or for general heating and thawing. **5** Low pressure warm water for washing trucks, tractors, etc. **6** Simultaneous steam degassing and cold water rinse, from Series 300 and 500. **7** Simultaneous high pressure hot solution and cold water washing from Series 300 and 500.

Simultaneous 2-gun Cleaning with Malsbary 300 HPC speeds repairs on big fleet for New England contractor, L. G. Defelice & Son, Inc. (Left.)

Four Times Faster than previous vapor cleaners, says Frantz Tractor Co., New York, of Malsbary 250 HPC shown here cleaning used tractor before repainting. (Right.)

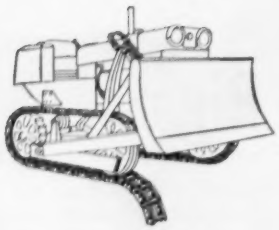
Helpful Data Free

See how other successful operators speed repairs and overhauls with Malsbary steam cleaners. Ask your Malsbary dealer for 4-page Construction Folder and other data—or write us.



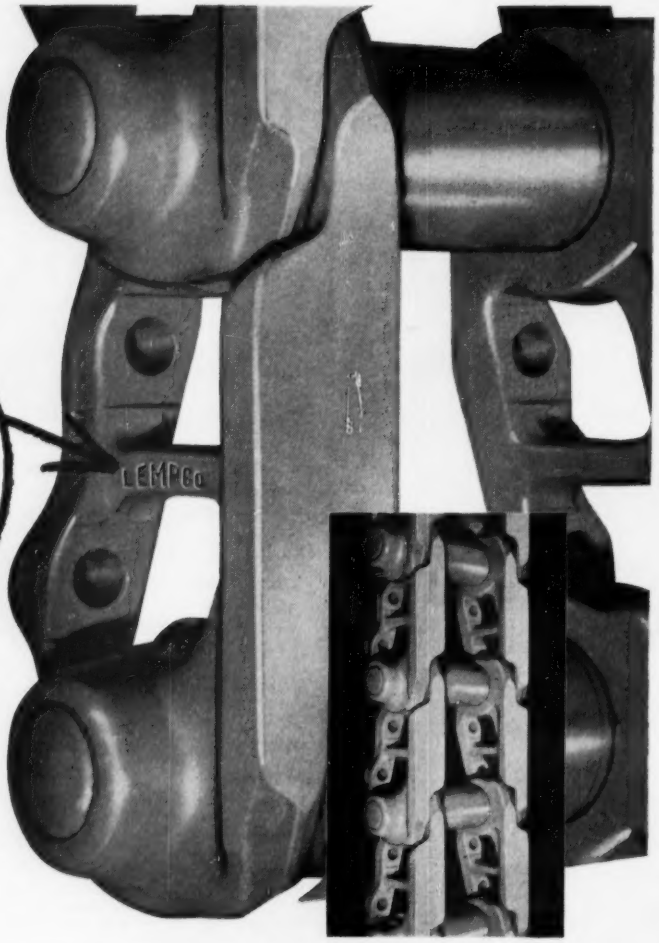
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MALSBARY MANUFACTURING CO.
Room C-11, 845-92nd Ave., Oakland 3, Calif.



When repairing
or replacing tracks

Look for this name!



It's your
guarantee
of long life,
trouble-free service

Every Lempco replacement tractor part bears our trademark "Lempco". What's more, every part is coded to tell us the metallurgy, when it was forged, the heat treatment, the date it was machined and Magnaflux inspected.

We do all this for one reason — to make sure the Lempco parts you buy give you maximum service. Every step is completely controlled from raw metal through the final testing. That's why Lempco tractor replacement parts are *guaranteed* to equal or surpass original equipment specifications.

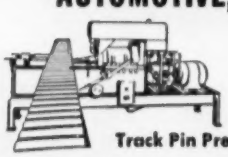
Next time you replace or repair a track, use Lempco replacement parts. Available either in complete assemblies or individual parts. See your jobber or equipment distributor or write Lempco Automotive, Inc., Tractor Division, 2953 E. 55th Street, Cleveland 27, Ohio for prices and catalogs.

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LEMPCO

AUTOMOTIVE, INC. • TRACTOR DIVISION

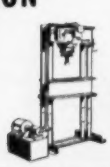
Lempco also manufactures



Track Pin Presses



Hydraulic Mobilcranes



Manual & Powered Hydraulic Presses

Subsidiary of Lempco Products, Inc., Manufacturers since 1918 of Automotive Replacement Parts, Crankshaft & Surface Grinders, Hydraulic Arbor Presses, Brake Drum Lathes & Grinders, High Speed Reamers

Pointers on Use of Seals

SEALS are a small and inexpensive part of an earthmoving machine. For this very reason they easily can be overlooked in normal maintenance. But they play an important role in protecting the vital parts of the machine.

Using the right kind of seal and installing it properly often can prevent serious damage to the engine and costly downtime.

Knowing when to replace seals is important, too. Leaking seals always should be replaced. But it is smar' to replace them before they start to leak if there is an opportunity to do so. They can be changed if they are in questionable condition during an overhaul.

Here are some tips on selection and installation of seals by J. B. Sinclair, of the Service Department of the Caterpillar Tractor Co.

Basic Materials

Seals come in a variety of materials, and the proper selection of a material depends on how the seal is to be used.

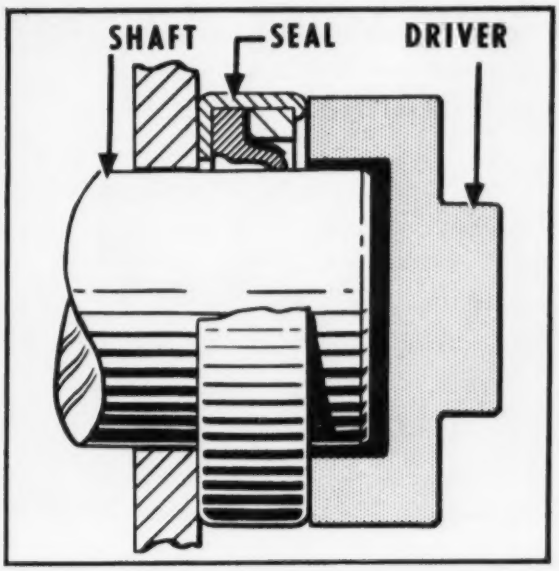
Felt is cheap and ordinarily is sufficient where the main function of the seal is to keep dust out. It is not used for retention of oil or grease.

When installing a felt seal, impregnate the seal with lubricating oil to protect it from overheating and wear. If the installation calls for the seal to be split, make the cut at an angle.

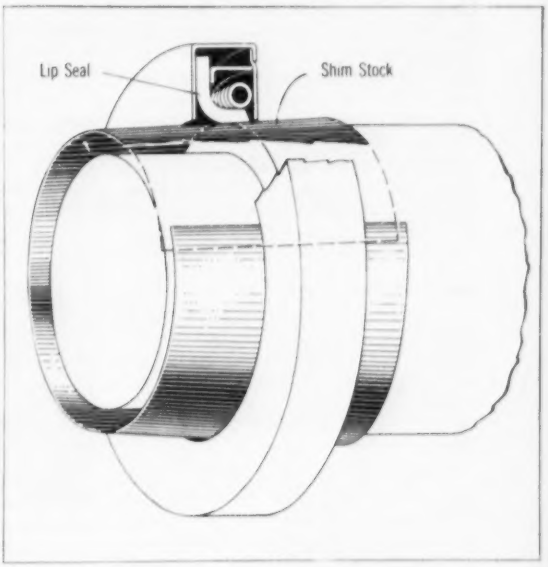
Cork seals are sometimes used instead of felt. They give good protection at temperatures up to 150 deg, but they are not recommended if they will be exposed to acids, alkalies, or high temperatures.

Cork will exclude dirt and water. It will also retain grease in a compartment if it is used against a solid backing such as on face type seals. When installing a face type cork seal, coat the cork face with graphite grease.

continued on next page

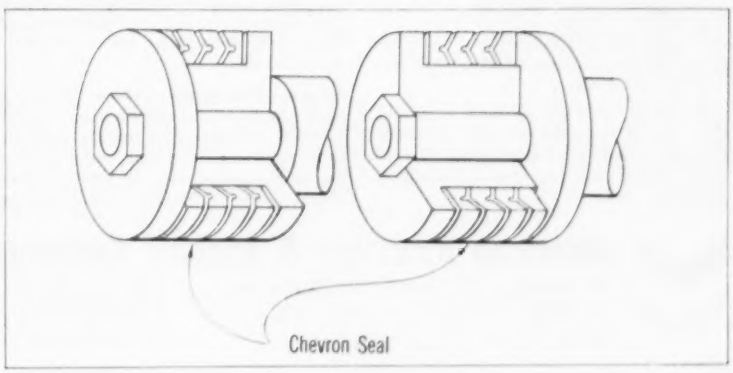


DRIVING — When driving lip-type seals on the end of a shaft, use driver that bears only on the lip of seal for most effective placing.



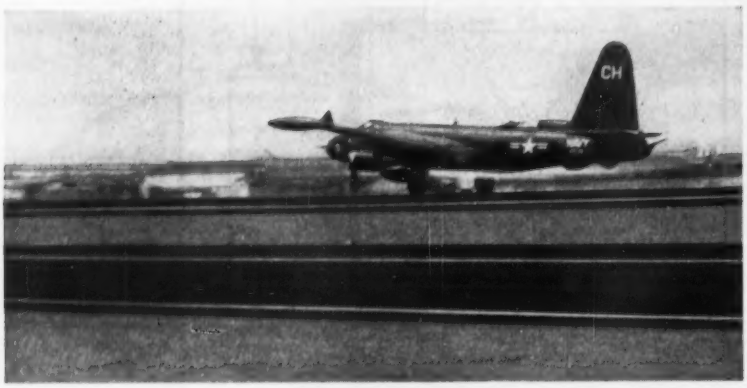
PROTECTION—When seal must pass over sharp shoulder, use shim stock or greased paper over area to give smooth sliding surface and protect seal.

DIRECTION—It is important to install seal in correct position. Chevron type packing seals point in direction of flange of piston.



Navy gets double savings with...

Bitumuls Slurry Sealing of Runways at Jet Training Station



IN addition to accommodating propeller-driven aircraft, the Alameda (California) Naval Air Station is an important West Coast jet aircraft training center. The runways, surfaced with asphaltic concrete some four years ago, recently showed signs of weathering: some ravelling, minor hair-cracks on the surface, and some loose material. (This loose material threatened to become a major source of expense after jets started operating here. Small stones, sand, etc. can cause considerable damage, when scooped into jet engines.)

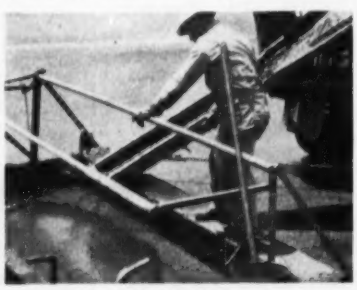
Dual Problem—The Navy was looking for answers to two problems: First, a method of extending the life of the pavement surface. Second, a means of cutting down the repair bills on jet engines. *They found a single answer to both these problems in Bitumuls Slurry Seal!*

Bitumuls Slurry Seal, composed of fine, sharp aggregate, Bitumuls and water, was mixed in transit-mix trucks to a free-flowing, slurry consistency, and applied by the squeegee action of a spreader-box. 350,000 sq. yards of runway and taxi-way were sealed in this manner. George Reed, a contractor from Modesto, California, was successful bidder on the job.

To offset the high abrasive action of the aircraft tires on landings, a dilute Bitumuls tack coat was placed ahead of the Slurry Seal to insure maximum adhesion.

Fast Application—The Bitumuls Slurry Sealing reduced interference with air traffic to a minimum. Planes at the Station were able to taxi over the fresh seal coat four hours after application. Jet aircraft landed on this new seal coat 24 hours after application!

"Meanwhile, Back at the Hangar..." In addition, an extra "bonus" economy will be realized because Bitumuls Slurry Seal has eliminated loose material from the runway. *The cost of mechanical repairs occasioned by the induction of foreign material through the jet engines is expected to be sharply reduced!*



BITUMULS SLURRY is chuted into spreader-box as mix-truck travels at speeds up to 5 MPH.

A Proved Procedure—Bitumuls® Slurry Seal has been proved on many installations—on highways, streets, and airport runways. Call our nearest office for full information. It will be given gladly; and, of course, no obligation.

American Bitumuls & Asphalt Company

200 Bush St., San Francisco 20, California

Baltimore 3, Md. · Mobile, Ala · Inglewood, Calif. · St. Louis 17, Mo. · San Juan 23, P. R. · Oakland 1, Calif. · Perth Amboy, N. J. · Cincinnati 38, Ohio · Tucson, Ariz. · Portland 8, Ore.

MAINTENANCE SHOP... continued

Leather is the common material for lip type seals, but it is being replaced by synthetic rubber for some applications. In many cases leather is still superior, so original leather seals should not be replaced by rubber unless the latter is specifically recommended.

When installing a leather seal, soak it in warm oil for about 30 min if possible.

Rubber seals generally provide better sealing at high speeds, high temperatures, and where misalignment and run-out conditions exist. Rubber lip type seals are also effective dirt seals. Before installing a rubber seal, dip it briefly in oil.

Rubber also is commonly used for O-ring seals. These are inexpensive but should only be used once. They conform to the groove they are put in, and should not be re-used after disassembly except in an emergency.

Installation of Seals

With single lip seals remember to install the seal with the wiping edge turned in the recommended direction. As a general rule, the lip points toward the material to be sealed.

If the main function of the seal is to keep dirt out, the lip points toward the outside. For sealing lubricant in a compartment, the lip points in.

A double lip seal often has one lip wider than the other. The wider lip points toward the lubricant to be sealed. If the seal is between two similar compartments, the wider lip points either to the one with the higher pressure or the one with the more fluid lubricant.

Direction of assembly is especially important with chevron type packing seals, normally used in hydraulic cylinders. The point of the chevron goes toward the flange of the piston. Always use sufficient shims behind the packing gland to give the chevron a slight press.

If a lip seal must pass over a sharp shoulder, keyway, or spline during installation, wrap shim stock over these areas to provide a smooth sliding surface. If shim stock is not available heavy paper coated with grease will work.

When driving a seal into position, use a driver that presses only against the rim of the seal.

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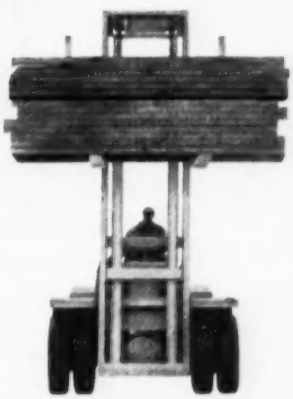
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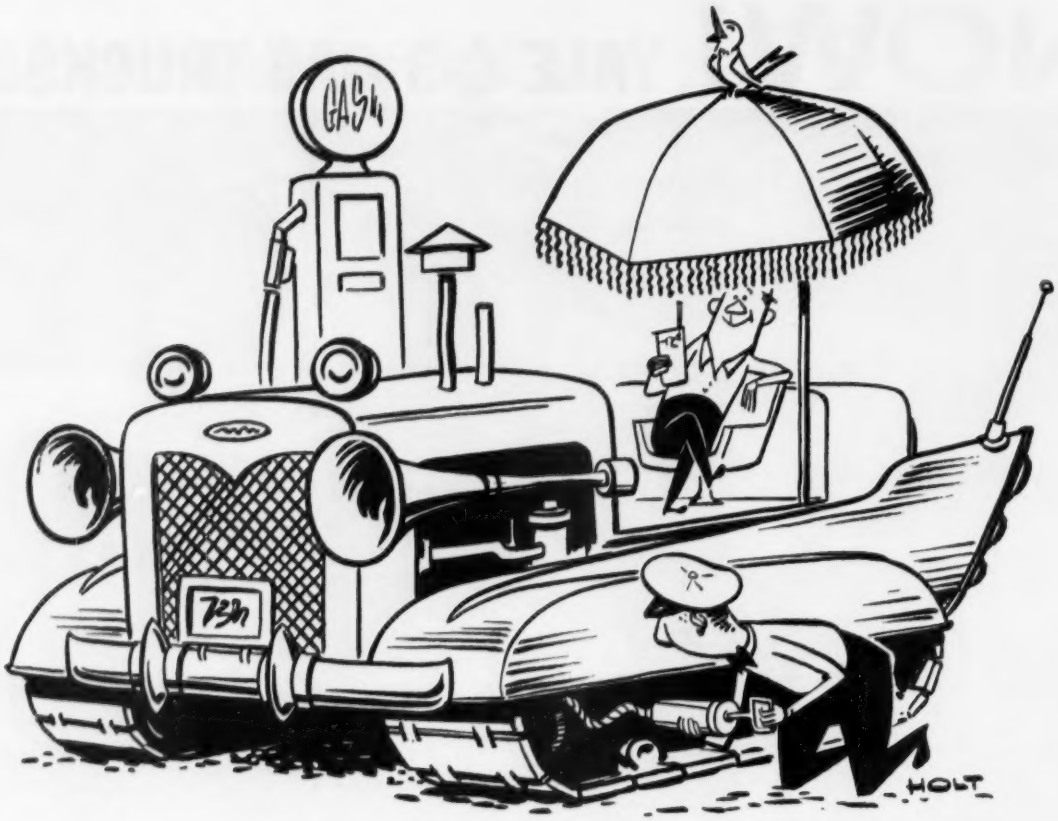
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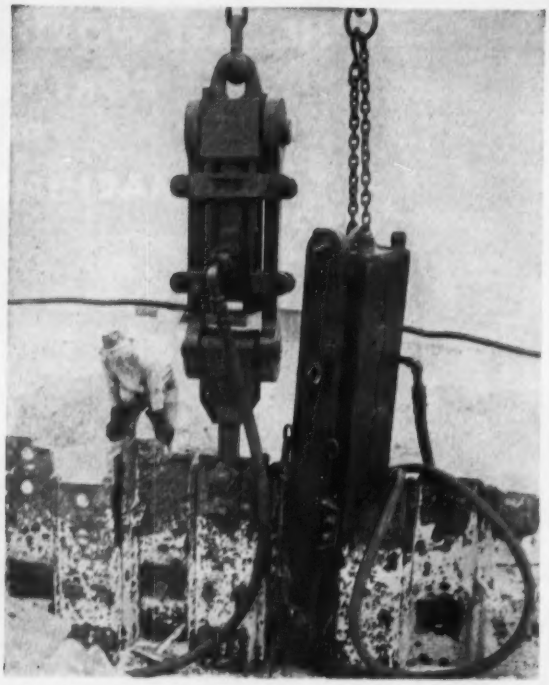
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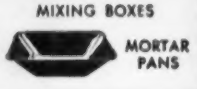
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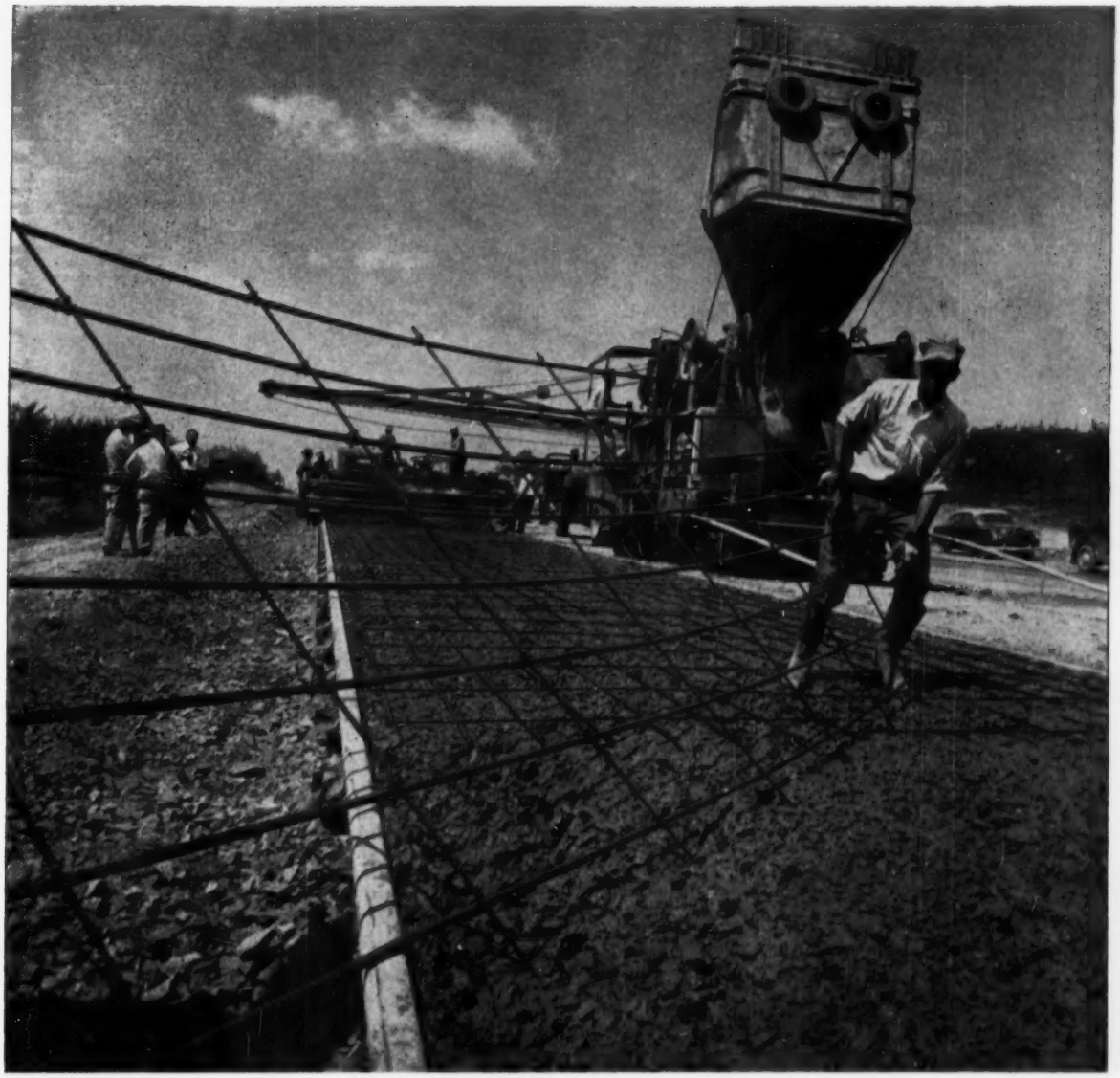
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Workmen place stee reinforcing bar mats on test section of U. S. Route 22, near Hamburg, Pa. James Julian, Inc., was contractor.

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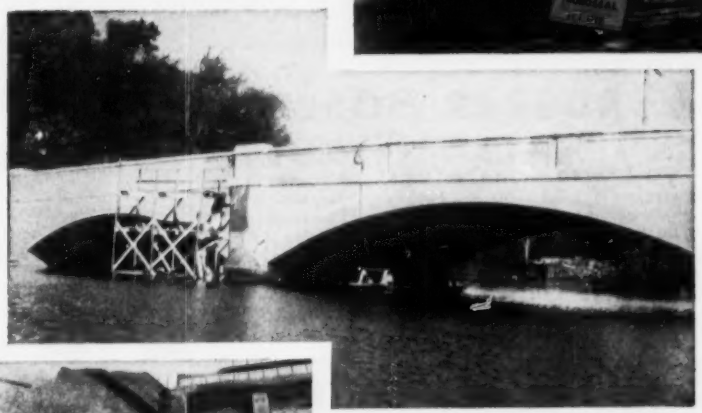
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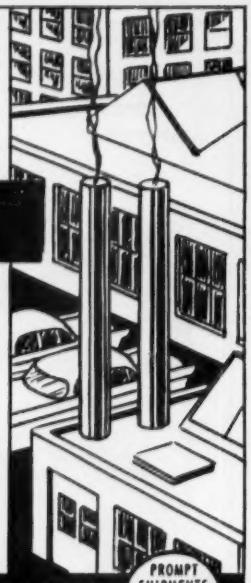
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Methods Memo...



Record Breaking Job

Traffic now flows over the completed roadway of the Mackinac Bridge where our photo shows this P&H truck crane at work laying steel decking. The bridge was opened Nov. 1, exactly on the schedule laid down four years ago.

Completion of the Mackinac Bridge is a major construction achievement. It is the longest suspension bridge in the world—8,614 ft includng anchorages. A total of 55,000 tons of structural steel went into its construction, and the cost of the steel work plus the suspension cables amounted to nearly $45 million—the largest bridge contract ever written.

Contractors on the job set some construction records, too. In May, 1955, Prepakt Concrete Co. made a record one-day underwater pour of 6,250 cu yd of grouted-aggregate concrete.

And American Bridge crews set another record last year by spinning the two suspension cables in 78 two-shift working days.

A Stiff—Not a Bum

Call a construction man a "stiff" if you mean it in friendly way. But don't even imply that he's anything less than a good citizen and a decent, law-abiding man. Not if you're working close to Robert Moses, Chairman of the New York Power Authority.

Here's how Moses answered the district attorney of Niagara County, New York, when that official got excited about law enforcement problems during construction of a power project there:

"The Niagara Falls Gazette of Oct. 12 reported your excited summons to officials from every town and hamlet in your county . . . to discuss your dire forebodings about crime which will be rampant when we begin construction of the Niagara Power Project. The impression is inescapable that these are the warnings and incitements which enliven the election season. We are told you are running for re-election.

"Why a city of 100,000 people and a county of 210,000 should worry about having a few thousand decent, hard working craftsmen in their midst . . . is hard for any reasonable person not actively engaged on a political campaign to imagine.

"The workmen in Niagara will earn and spend locally millions of dollars. . . . These men are not hoodlums. They are decent, honest, self-respecting family men. A large part of them will be recruited locally. The rest will be professional construction workers of great skill who move from one huge construction project to another and take great pride in changing the earth's surface for the benefit of man. They are not in local politics.

"We have no crime problem on the St. Lawrence as you can easily ascertain, if you have any interest in facts. You will find that we will have none at Niagara.

"We expect to do your community a great deal of good in the period of construction and leave it better than we find it. Meanwhile, we suggest that you keep your shirt on."

Next Road Show in 1963

Construction Industry Manufacturers Association is starting to make preliminary arrangements to hold the next Road Show in Jan. or Feb. of 1963.

A poll of the entire CIMA membership showed a strong preference for holding the next Road Show in 1963 or earlier. Last month, the CIMA Executive Committee agreed on scheduling it for early 1963.

A Challenging Career

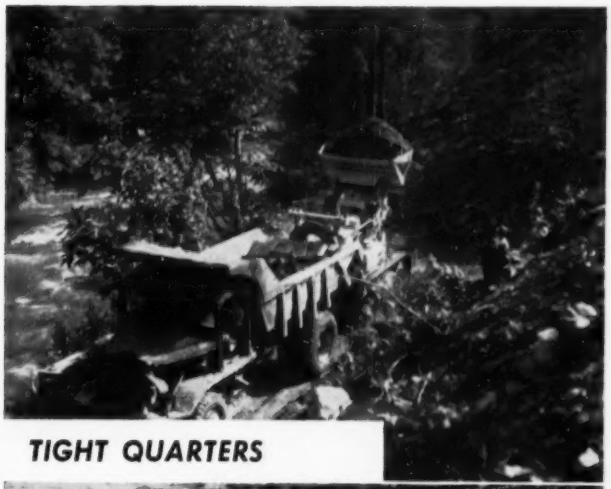
Have you ever thought of becoming a technical editor? It offers an unparalleled opportunity to learn the broader aspects of the contracting business, to become acquainted with leading engineers and contractors, to be first "in the know" about exciting advances in the construction field.

Editorial staff positions on CONSTRUCTION METHODS are available from time to time. The men we look for should have: practical field construction experience, a familiarity with construction machinery and materials, a civil engineering education background, an enthusiasm for new developments, a sympathetic interest in people and their ideas, a desire to make a career in technical journalism. Reporting, writing, or editing know-how would represent a plus value.

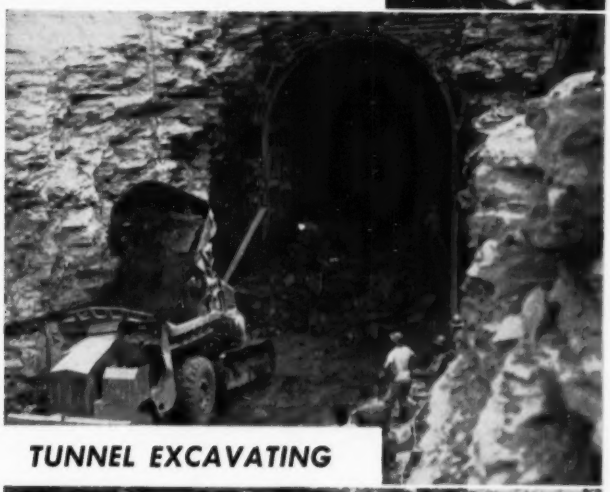
If you are interested, detail your qualifications in a letter to the Editor.

MR. CONTRACTOR

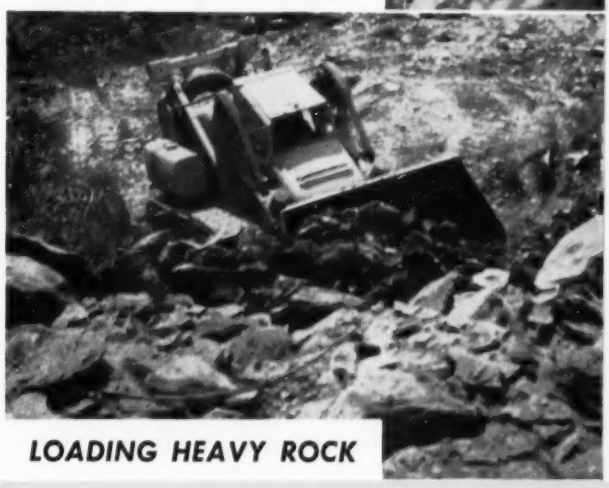
IN SPOTS LIKE THESE YOU NEED AN EIMCO EXCAVATOR



TIGHT QUARTERS



TUNNEL EXCAVATING



LOADING HEAVY ROCK

Illustrated are just three job conditions where 105 Eimco Excavators outperform other earthmovers. It takes care of the tough jobs just as efficiently as it does the easy ones.

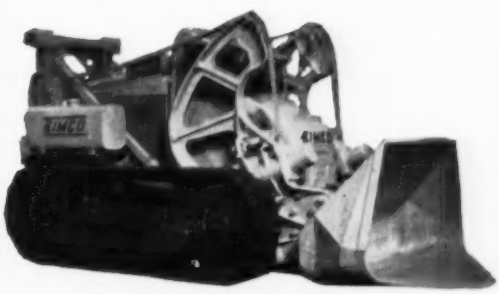
The knowledge and experience gained from building thousands of underground loaders was used to full advantage when we designed and engineered the Eimco Excavator. We gave it the same extra strength for severe service; increased the life and efficiency of working parts thru simplification; gave it I.T.R. (independent track reversal) mobility and "passenger car" power-shift operating ease. Then we put the operator up front where he can see what's going on.

Overhead discharge speeds cycle time; makes it possible to dig, load and dump from one position and do road-work without stopping highway traffic.

With powerful crowding action (39,000 lbs.) the Eimco 105 loads large rocks without secondary blasting usually required when boom shovels or other loaders are on the job.

The Eimco 105 Front-End Loader combines this same high tractor mobility with front end loading versatility for handling scores of different jobs economically.

Write for information on the Eimco 105 Tractor Excavator or Front-End Loader . . ideal highway building tools.



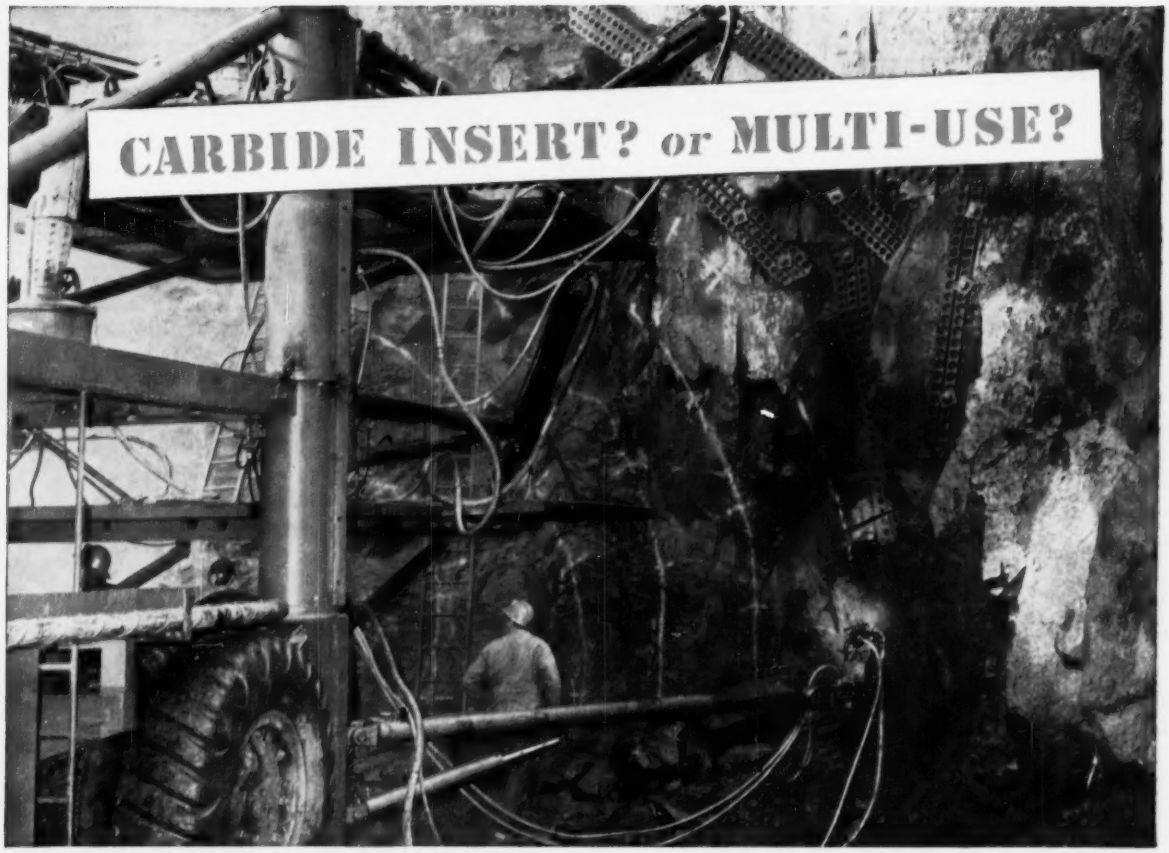
EIMCO 105 EXCAVATOR

THE EIMCO CORPORATION

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B-295



LOCATION: Mayfield Dam site, near Saukum, Washington. **OPERATING CONDITIONS:** Medium blocky basalt.

Increased drilling speed with TIMKEN® carbide insert bits saves time, labor on Mayfield Dam tunnel

DRILLING a diversion tunnel for the city of Tacoma's Mayfield Dam, Gibson and Roberts, rock drilling specialists of Yardley, Washington, had to chew through medium blocky basalt. For highest economy drilling through this hard ground, they used Timken® carbide insert rock bits with their jumbo drill rig.

Timken carbide insert rock bits permitted high speed drilling with fewest bit changes. With Timken bits the ground was drilled and blasted in one shift.

Under many tough drilling conditions, you can get top economy with Timken carbide bits. But carbide insert bits may not be best for every job.

In softer, less abrasive ground, Timken multi-use bits, correctly controlled and reconditioned, give you the lowest cost per foot-of-hole when you can drill out full increments of drill steel.

Whether your drillers use Timken multi-use or Timken carbide insert bits, they will save time because these bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. You can change bits right on the job, as fast as the ground changes. What's more, Timken rock bits are made from our own electric furnace fine alloy steel. And they have a specially developed shoulder union that protects threads from drilling impact.

To find out which type of Timken rock bit will do the best job for you write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit

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